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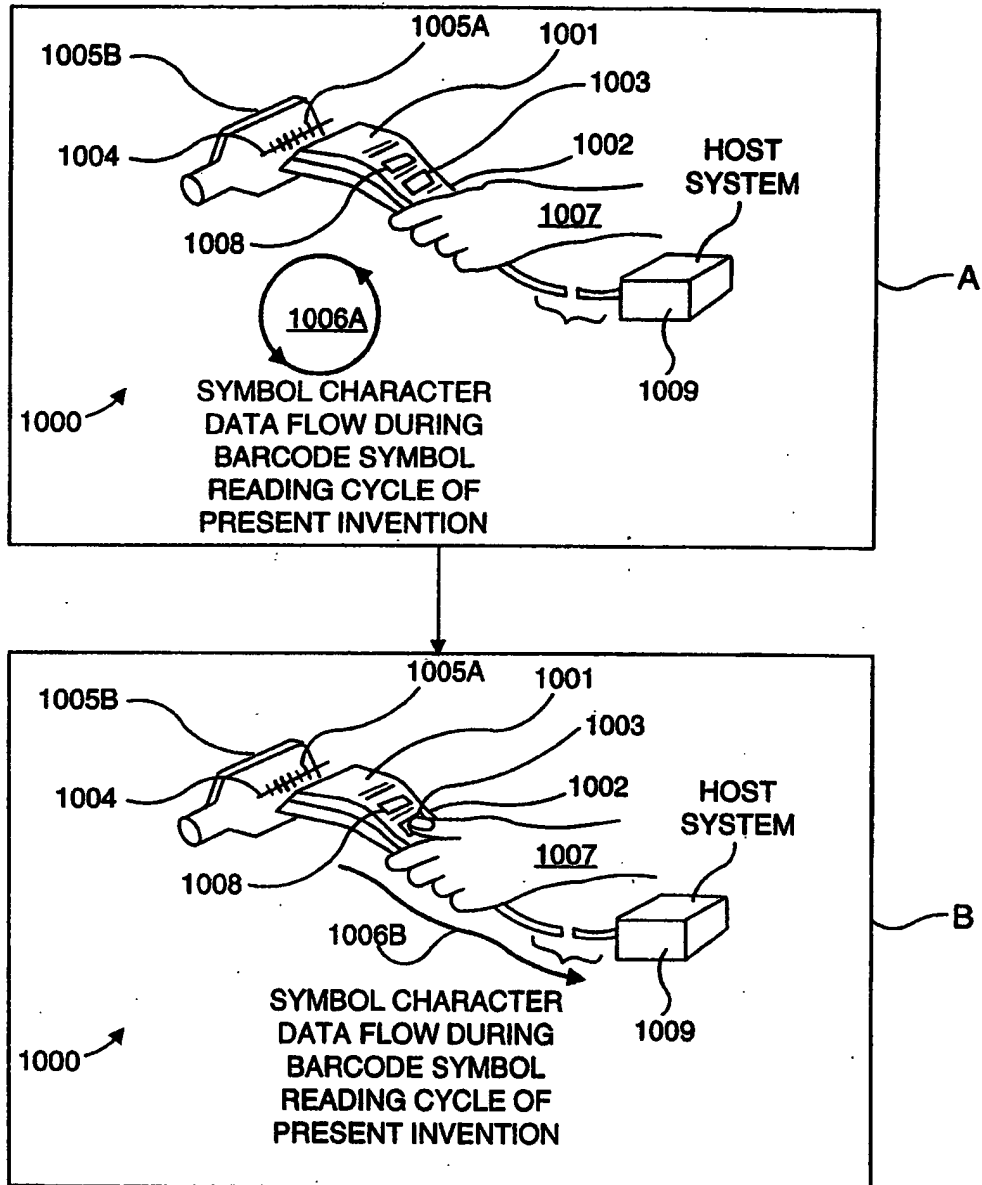
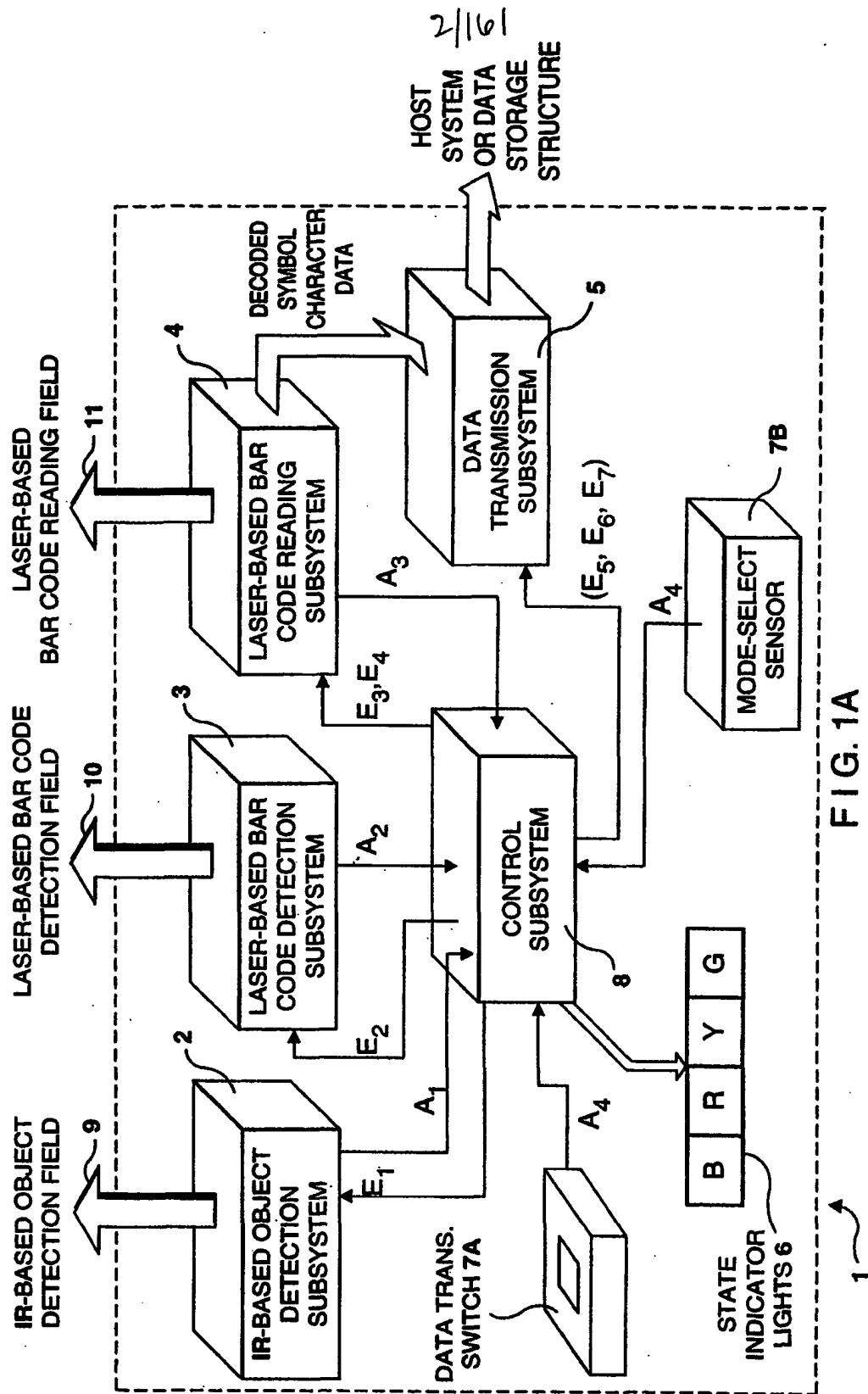


FIG. 1



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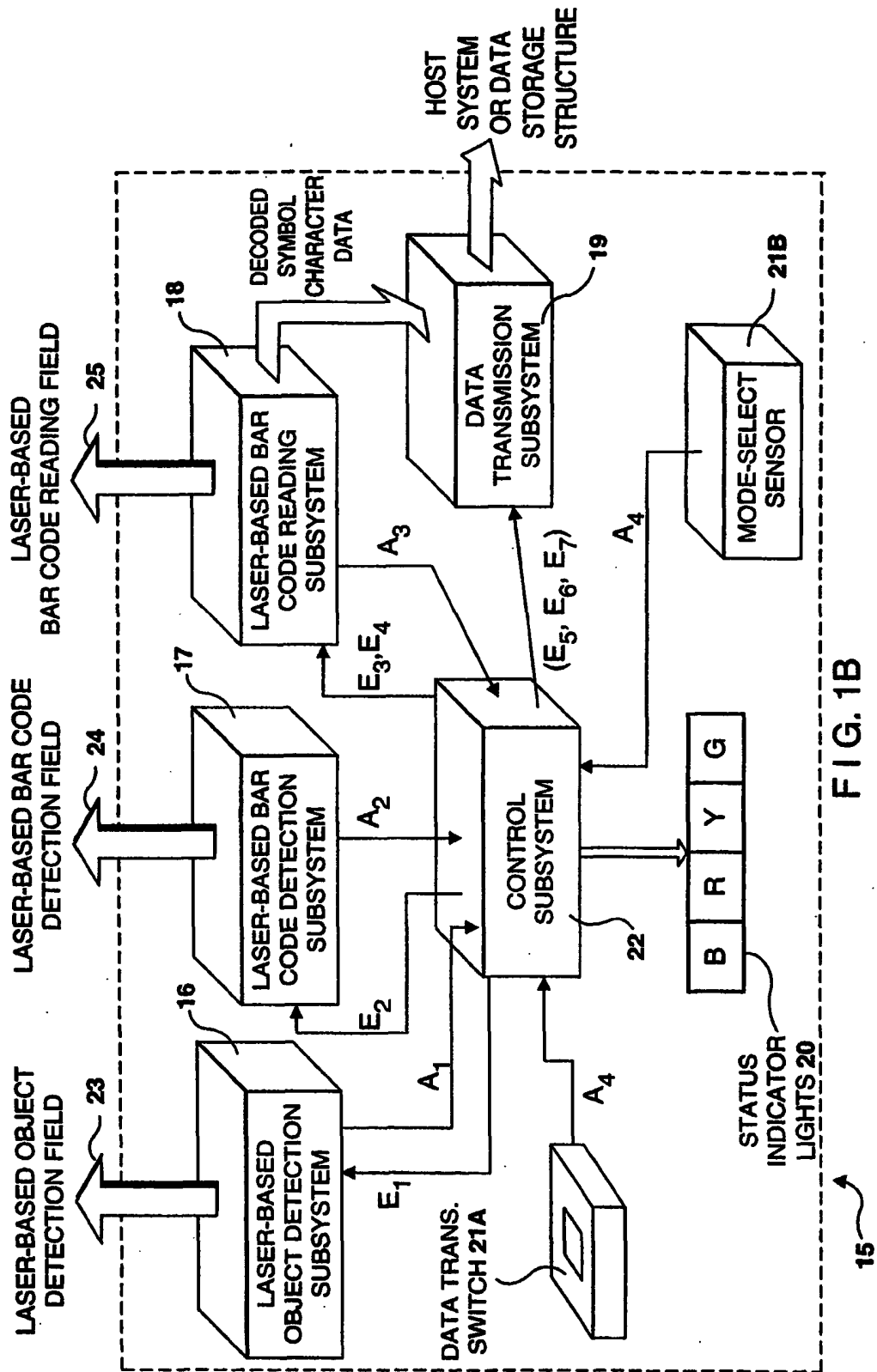


FIG. 1B

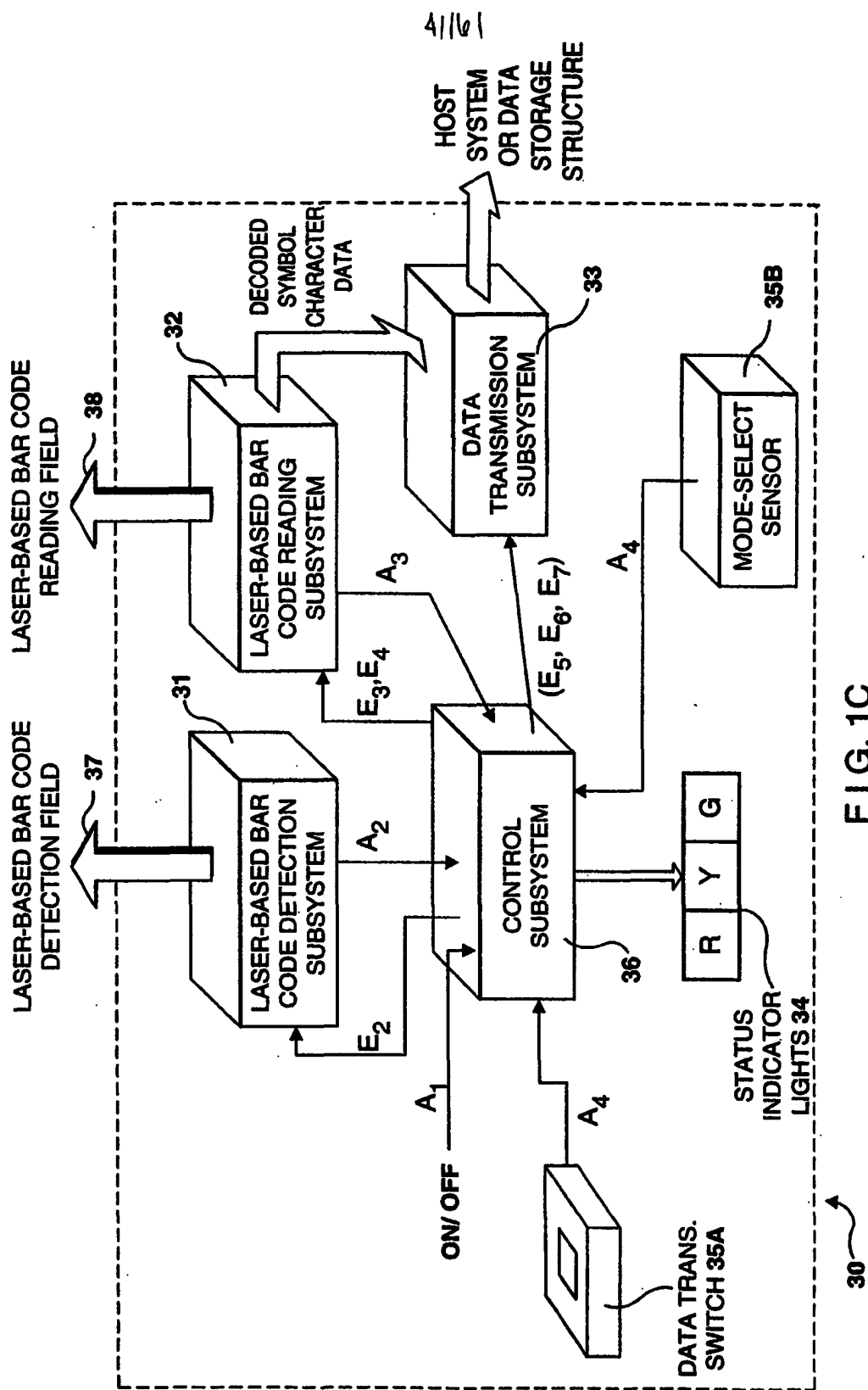
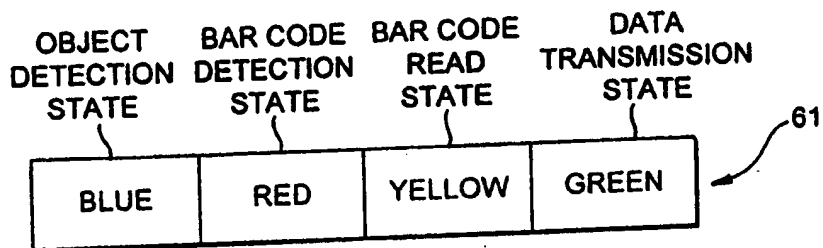
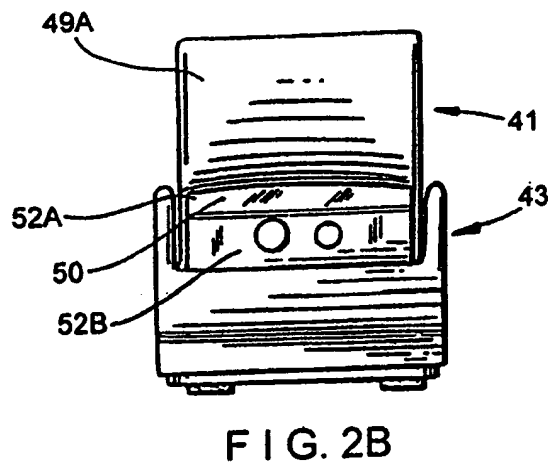
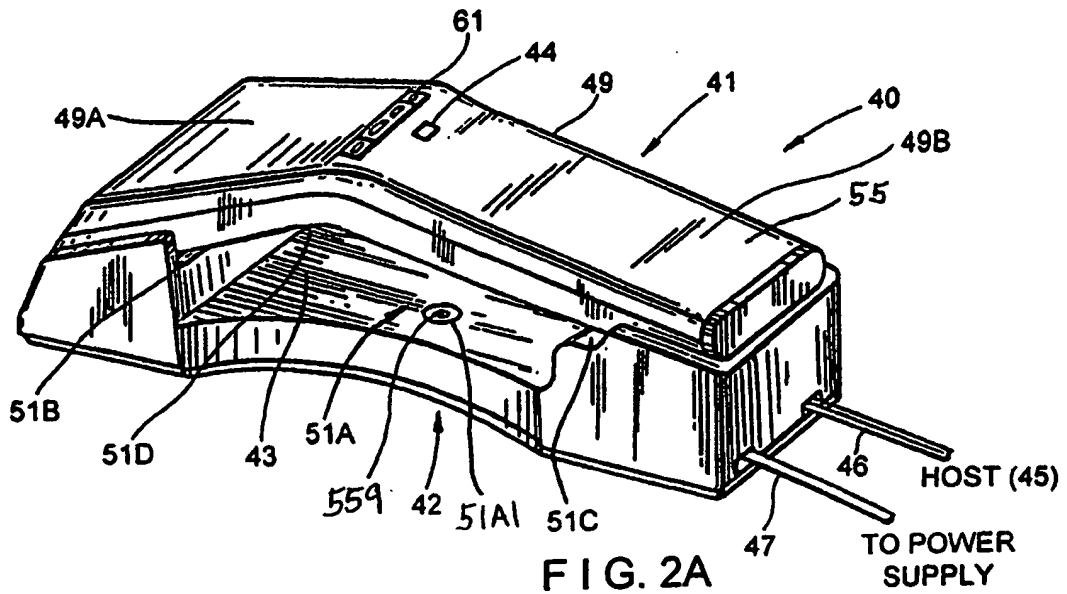
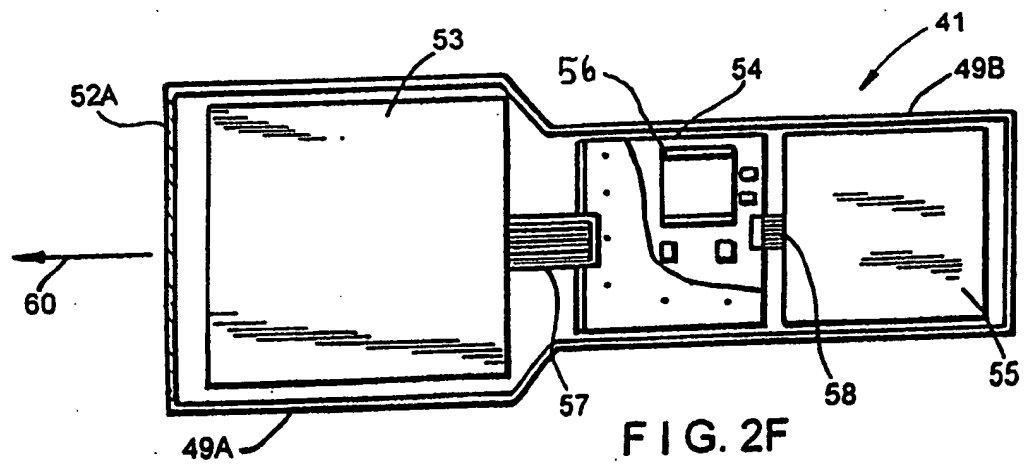
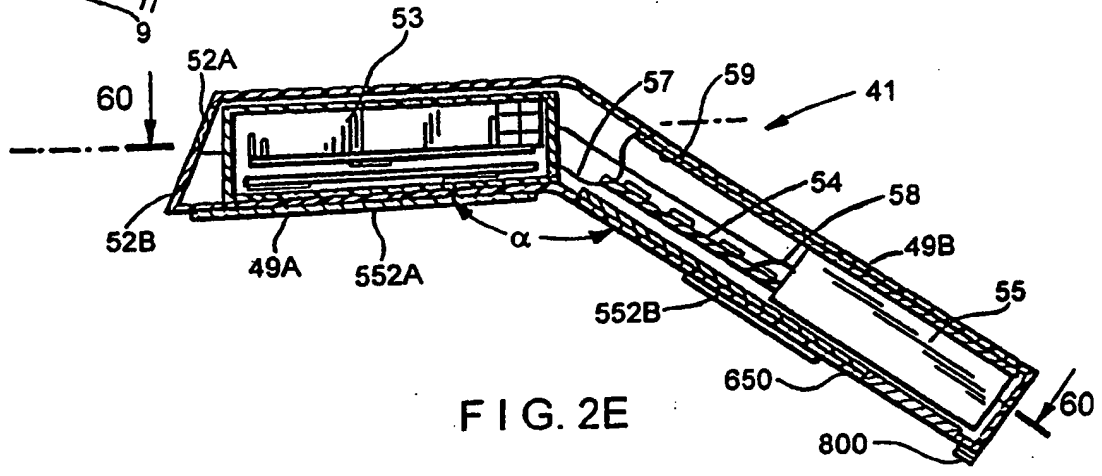
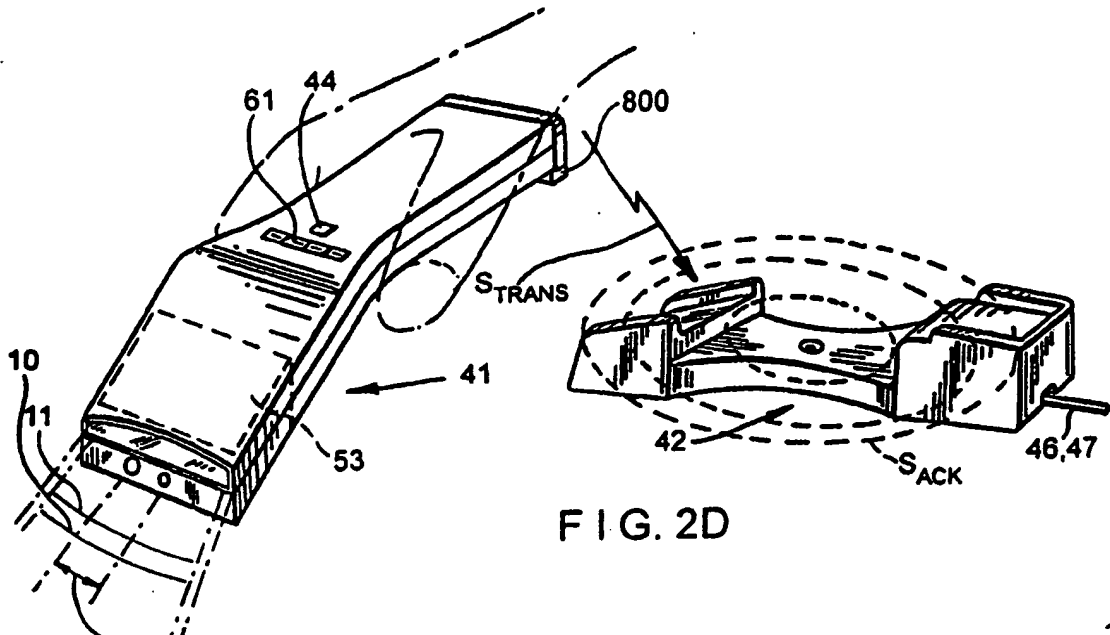


FIG. 1C

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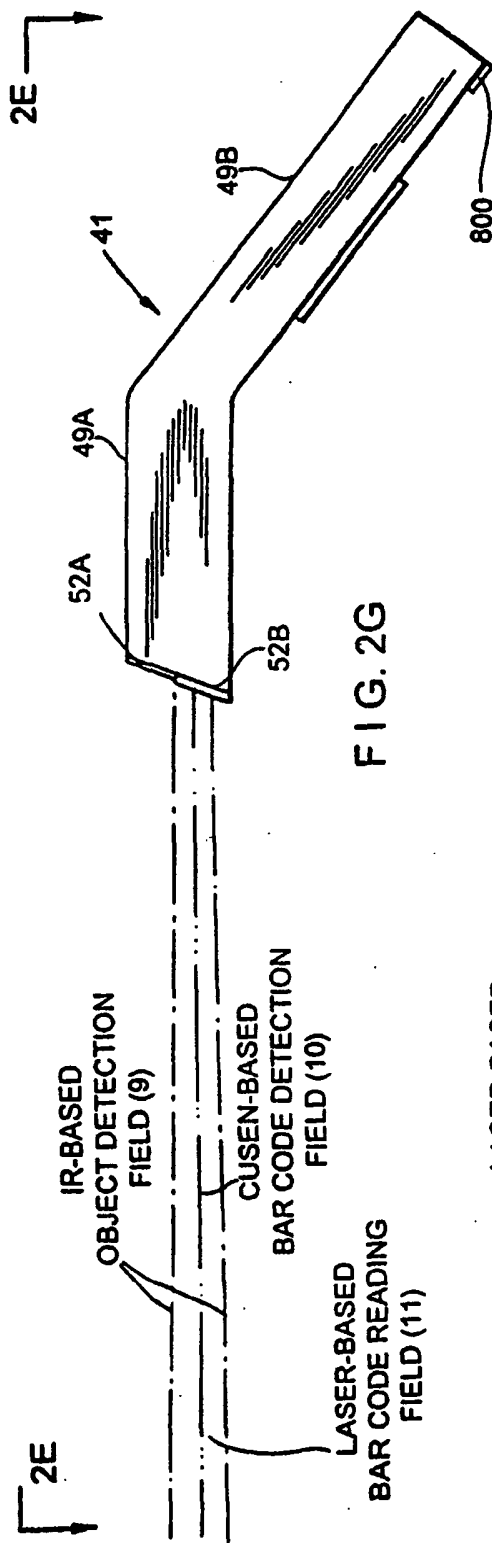


FIG. 2G

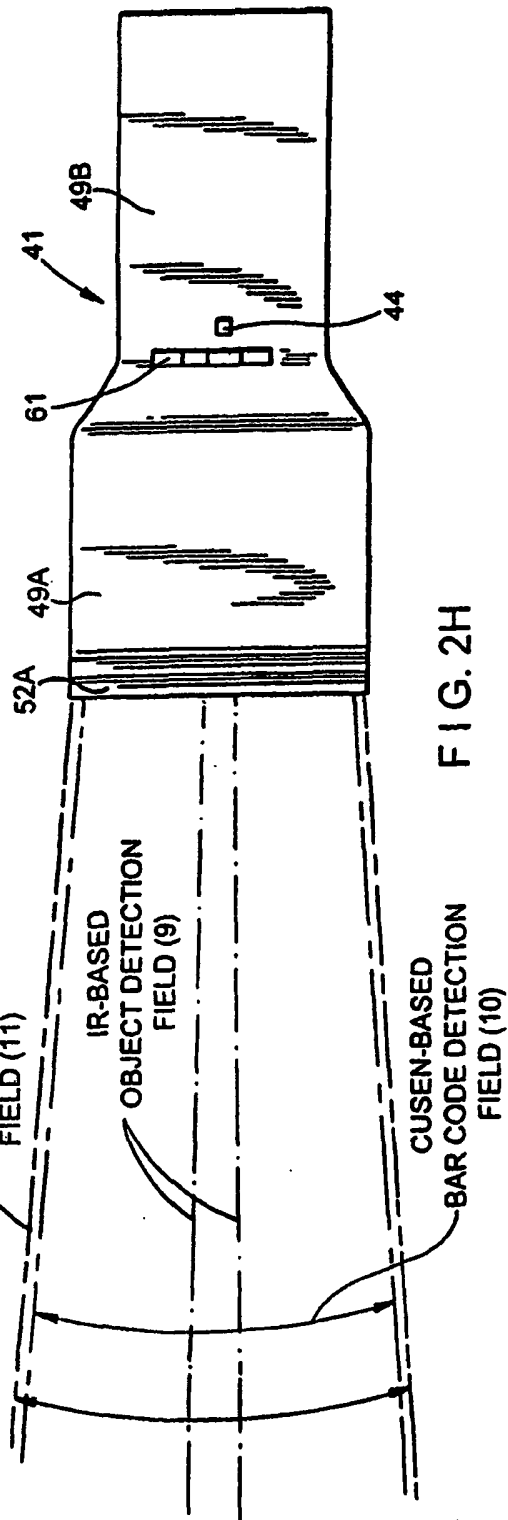


FIG. 2H

IR-BASED
OBJECT DETECTION
FIELD (9)

CUSEN-BASED
BAR CODE DETECTION
FIELD (10)

LASER-BASED
BAR CODE READING
FIELD (11)

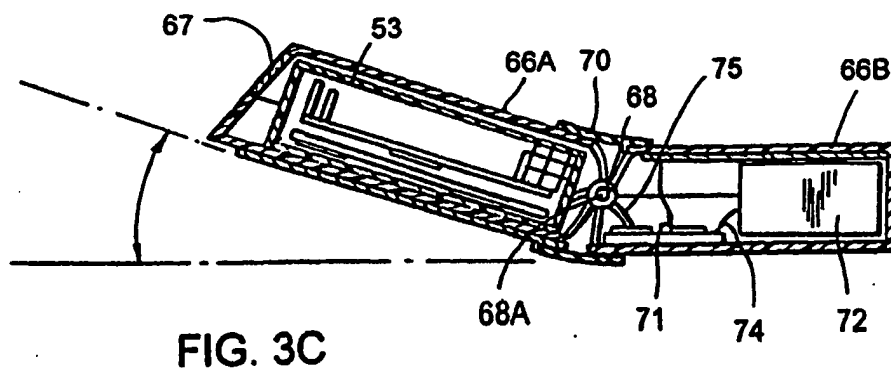
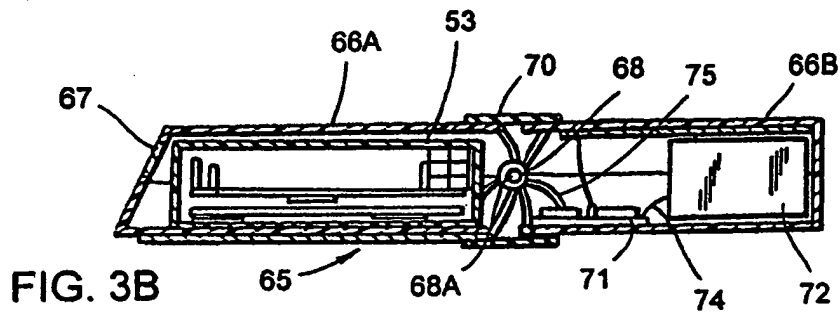
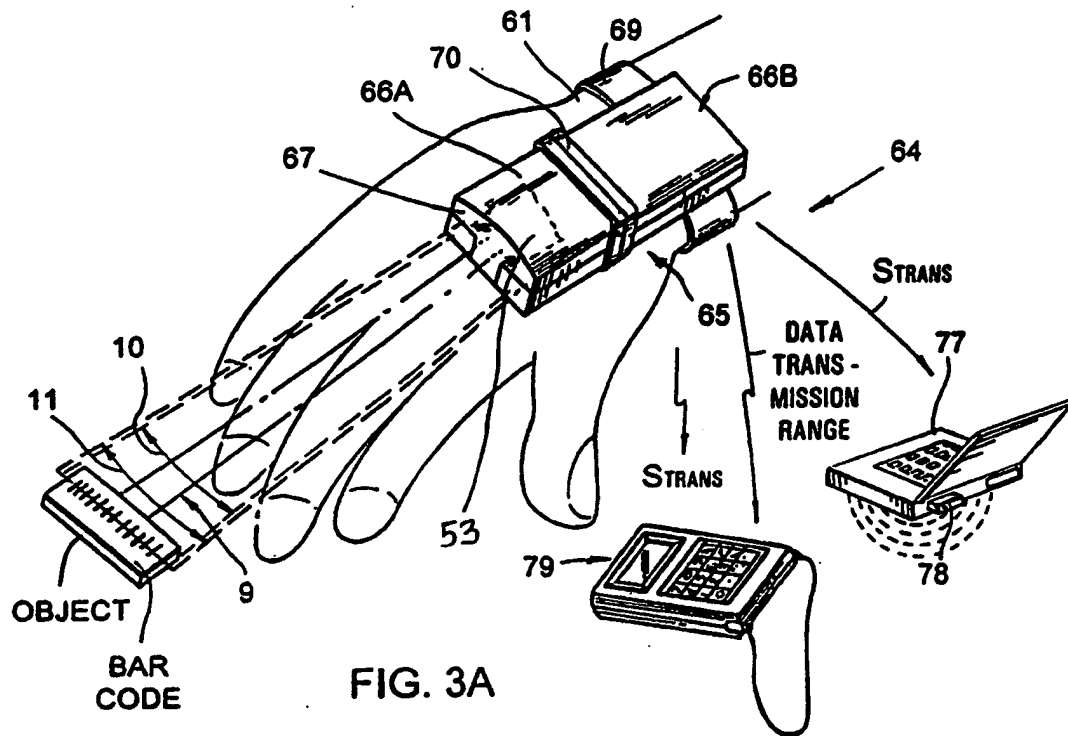
LASER-BASED
BAR CODE READING
FIELD (11)

IR-BASED
OBJECT DETECTION
FIELD (9)

CUSEN-BASED
BAR CODE DETECTION
FIELD (10)

FIG. 2J

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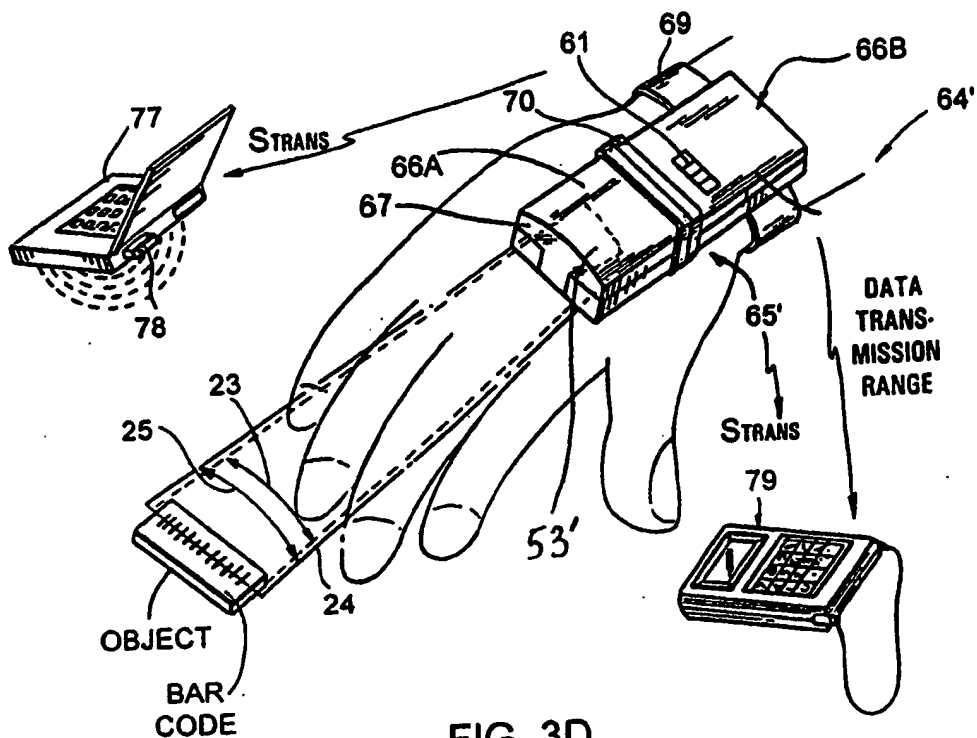


FIG. 3D

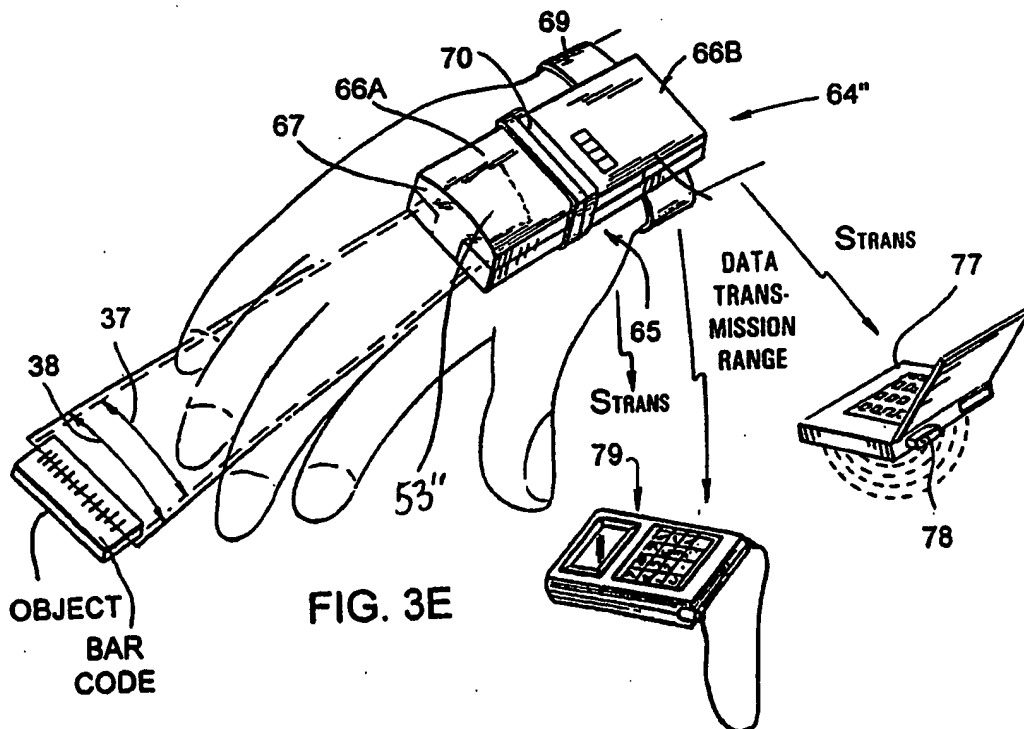
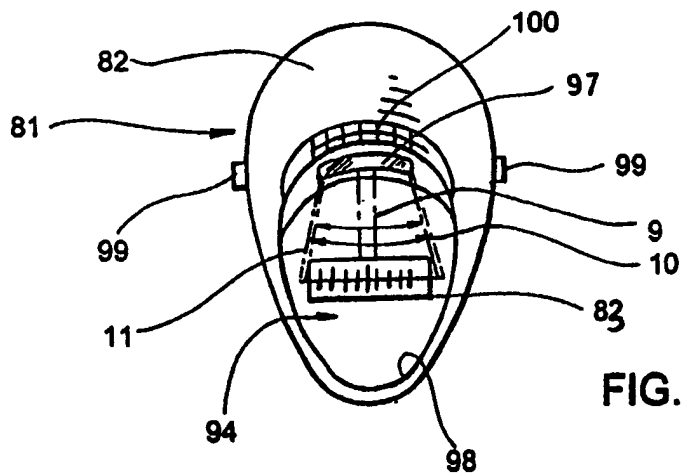
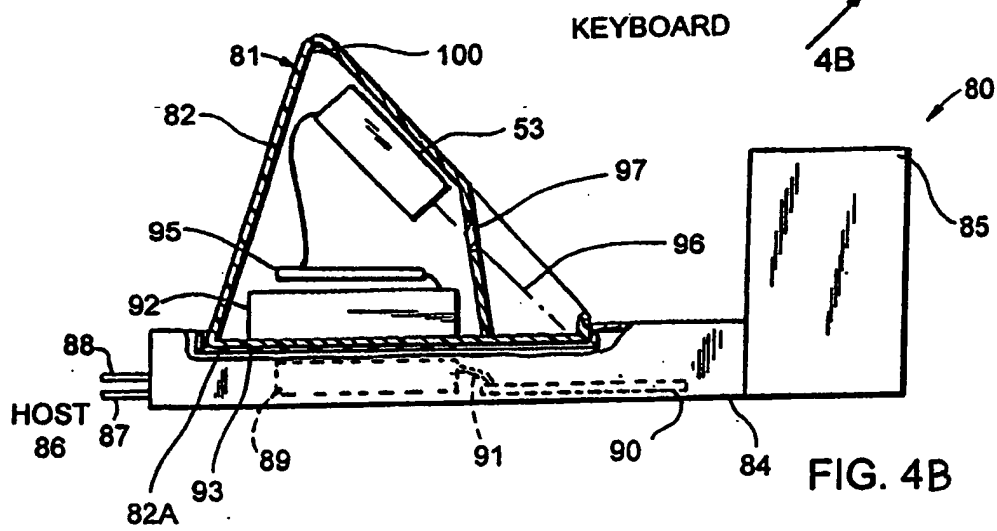
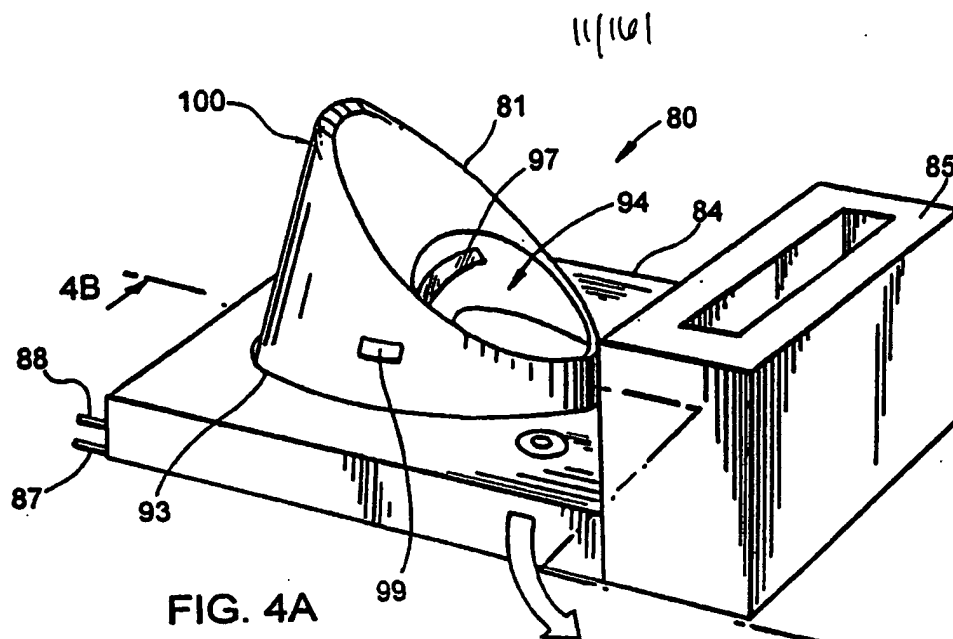
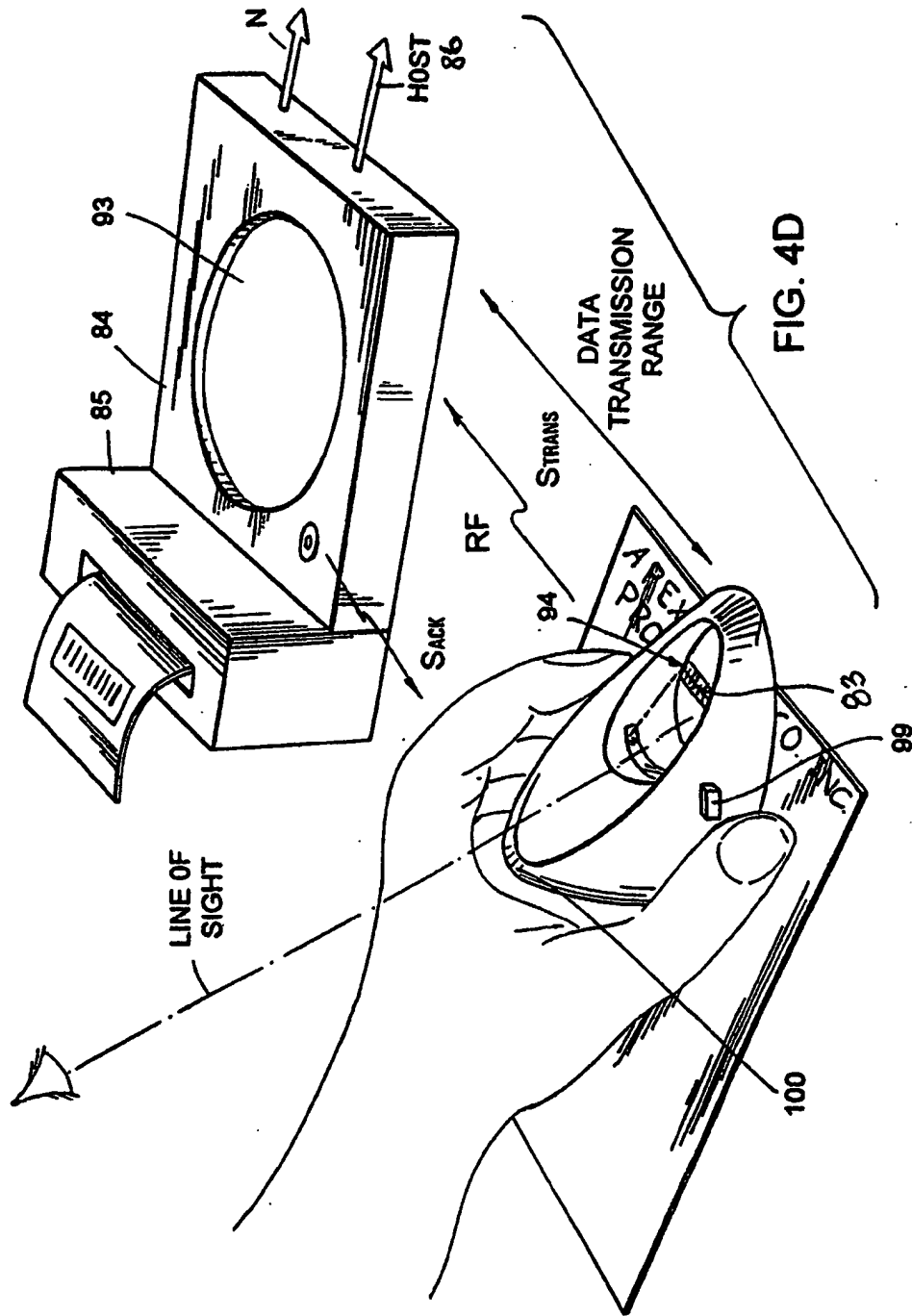


FIG. 3E



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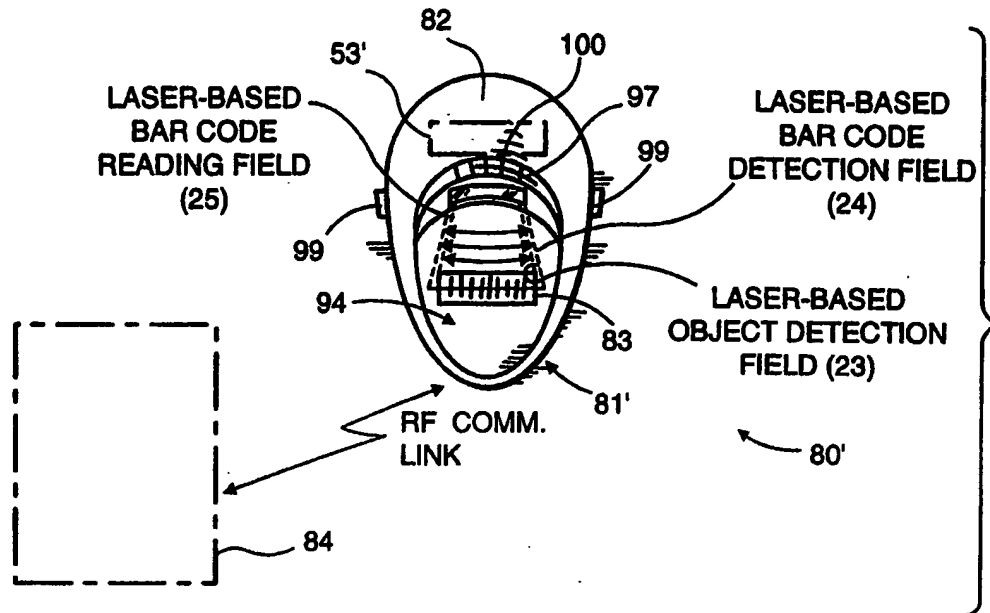


FIG. 4E

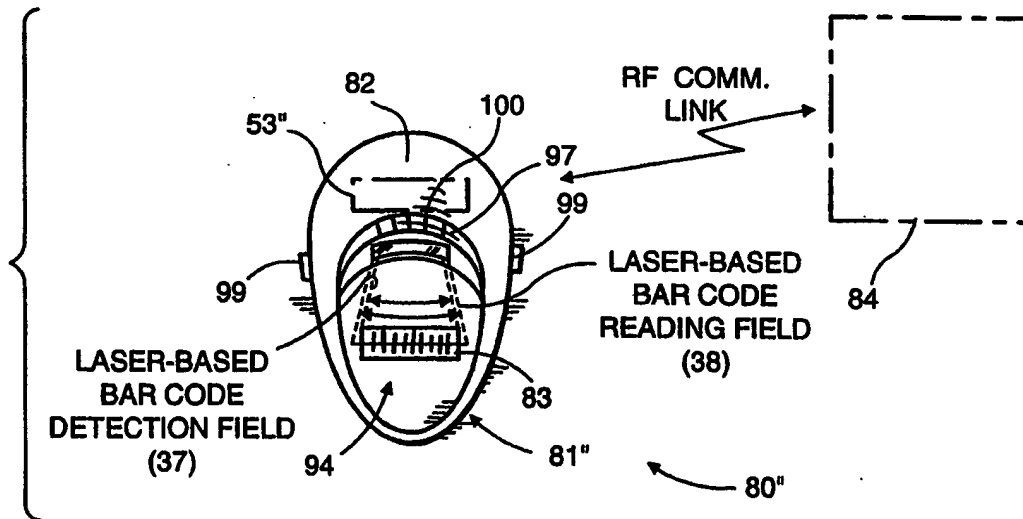


FIG. 4F

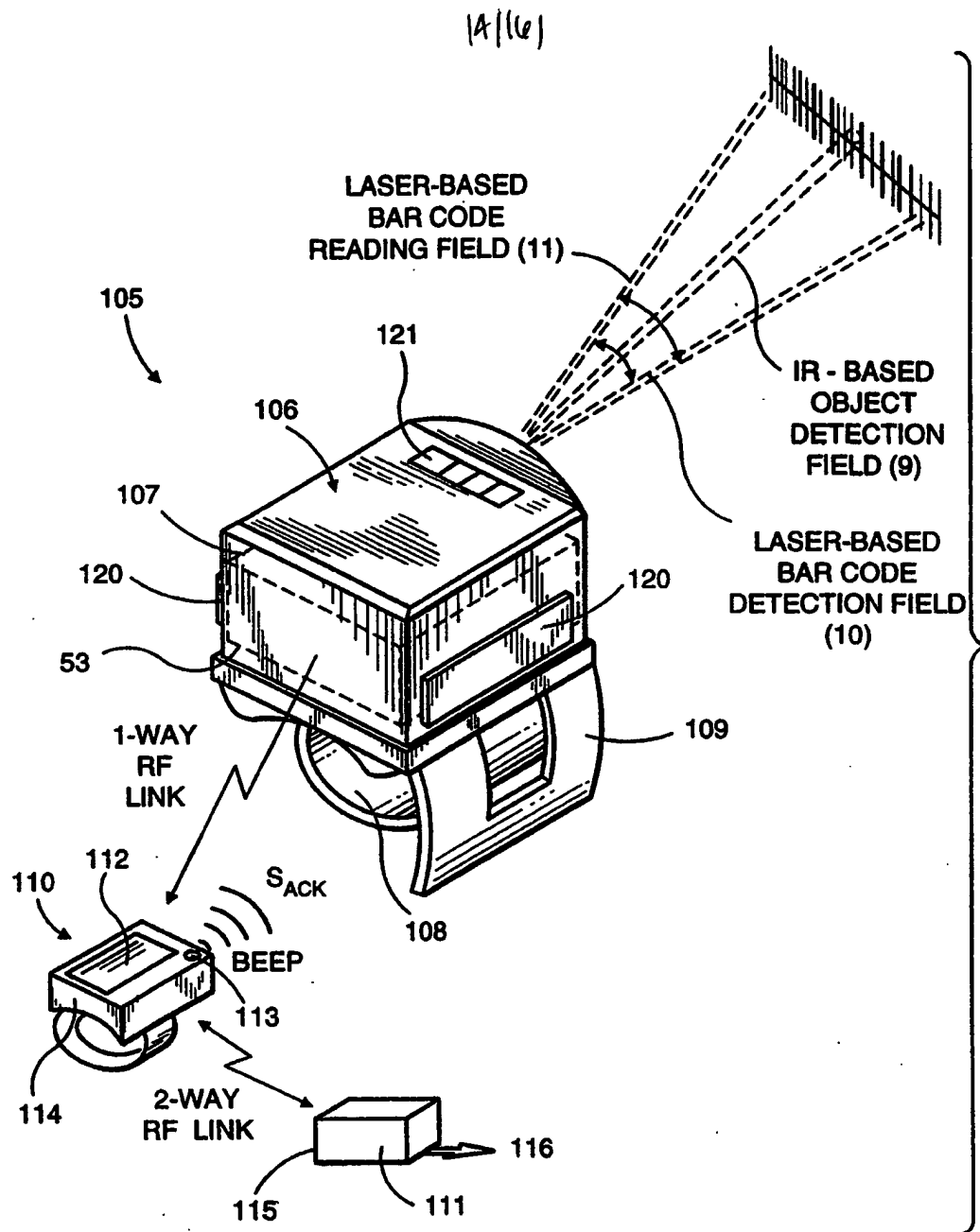


FIG. 5A

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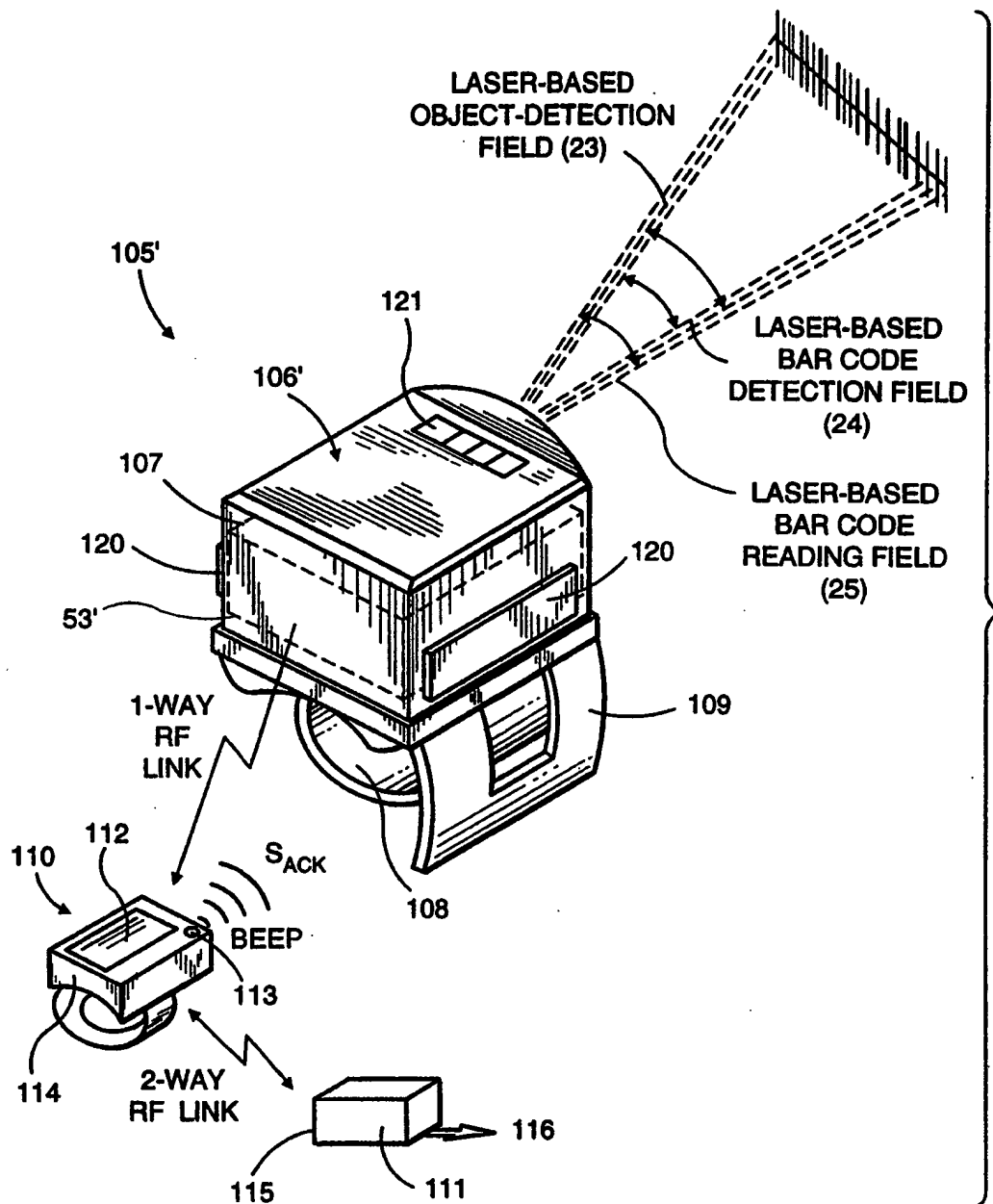


FIG. 5B

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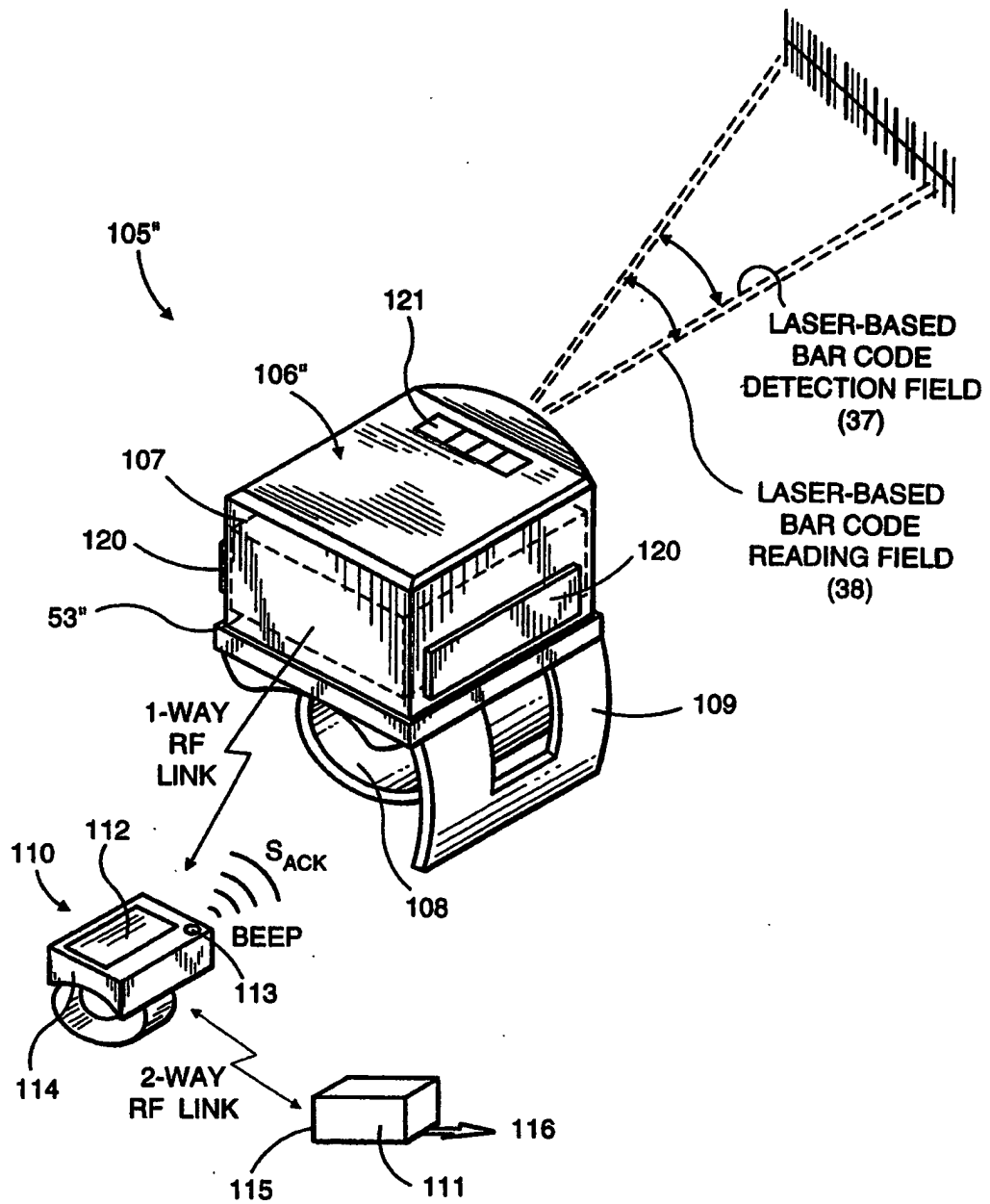


FIG. 5C

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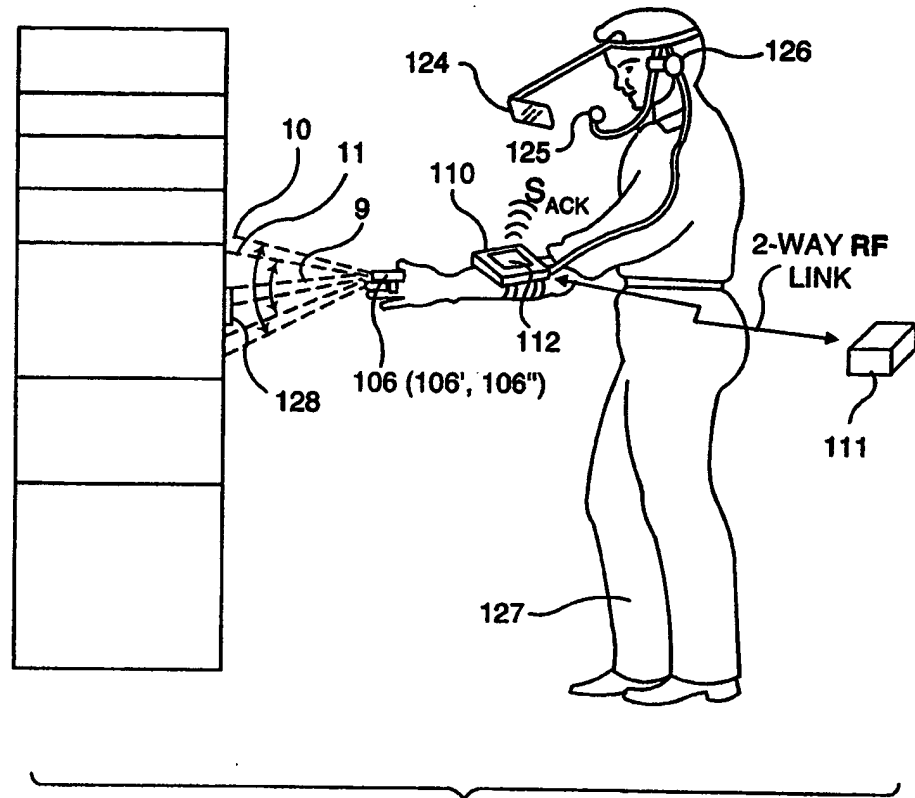
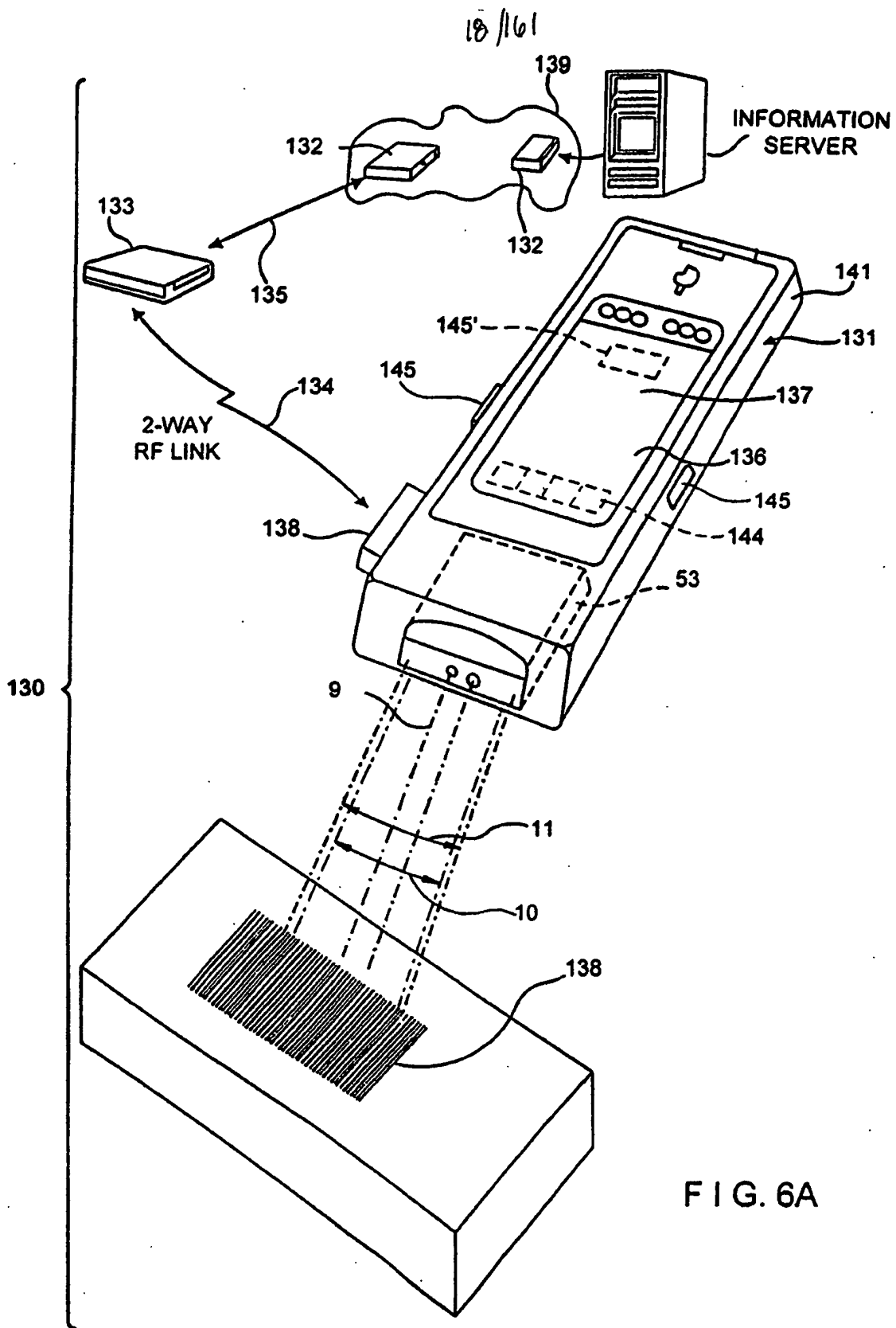
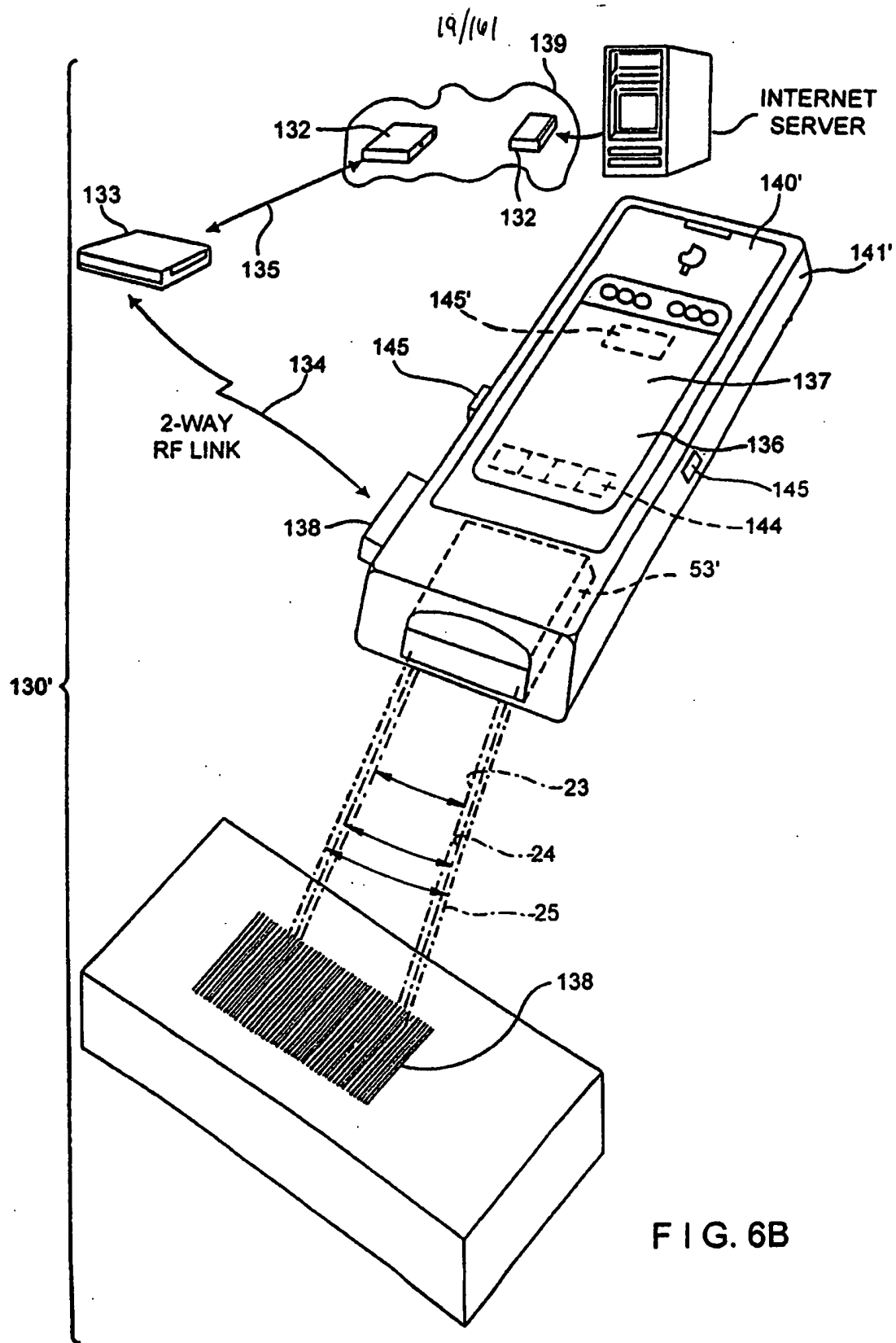
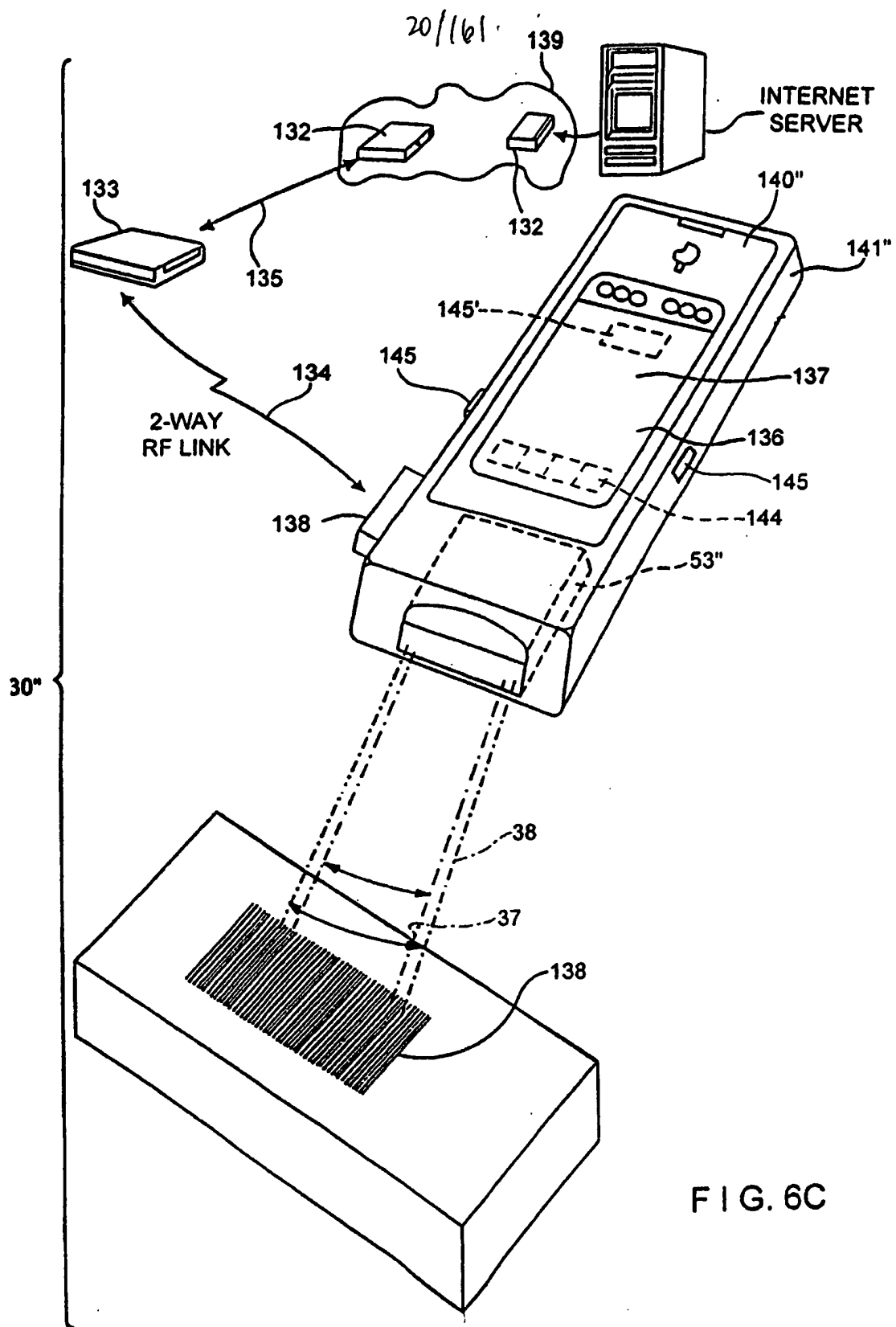


FIG. 5D







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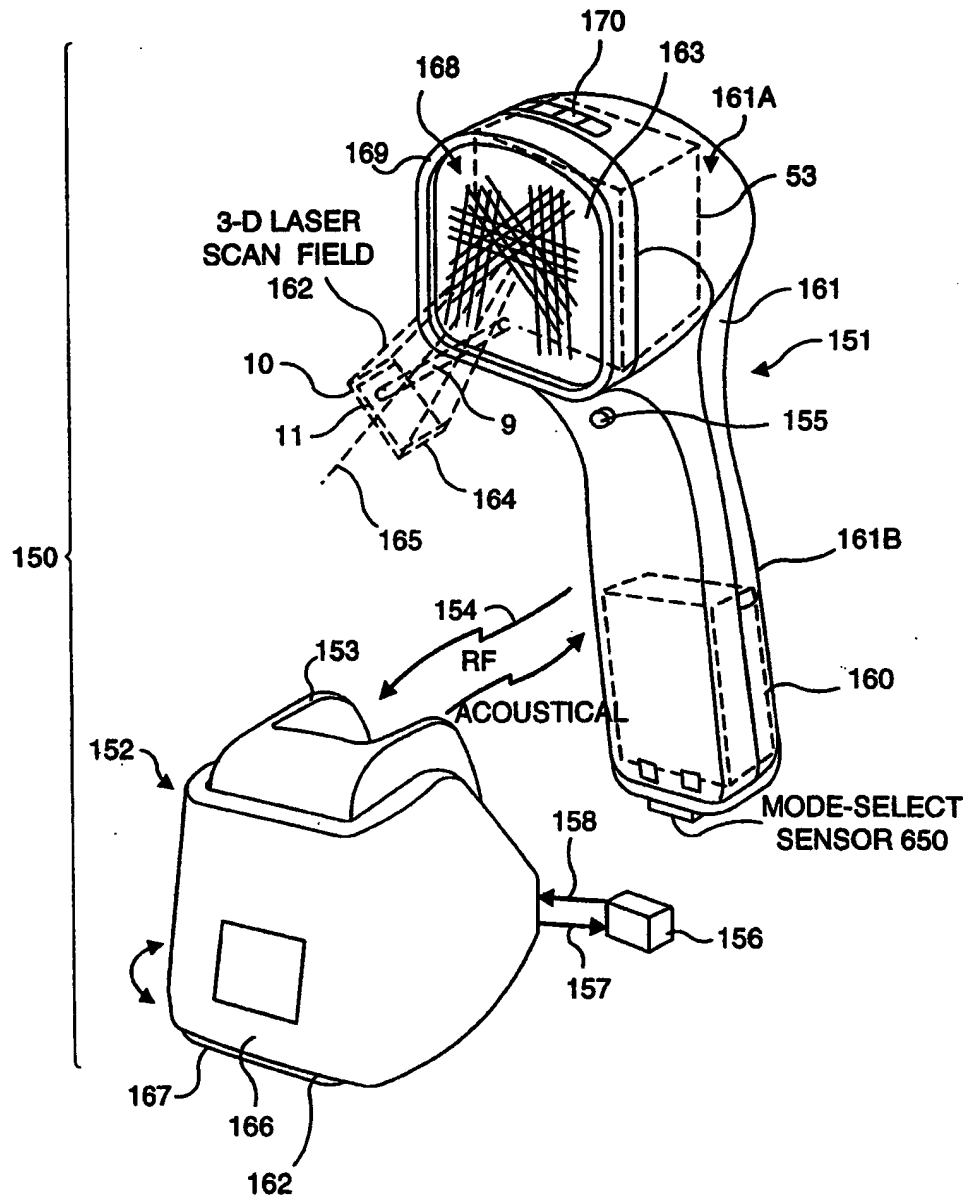


FIG. 7A

FIG. 7B

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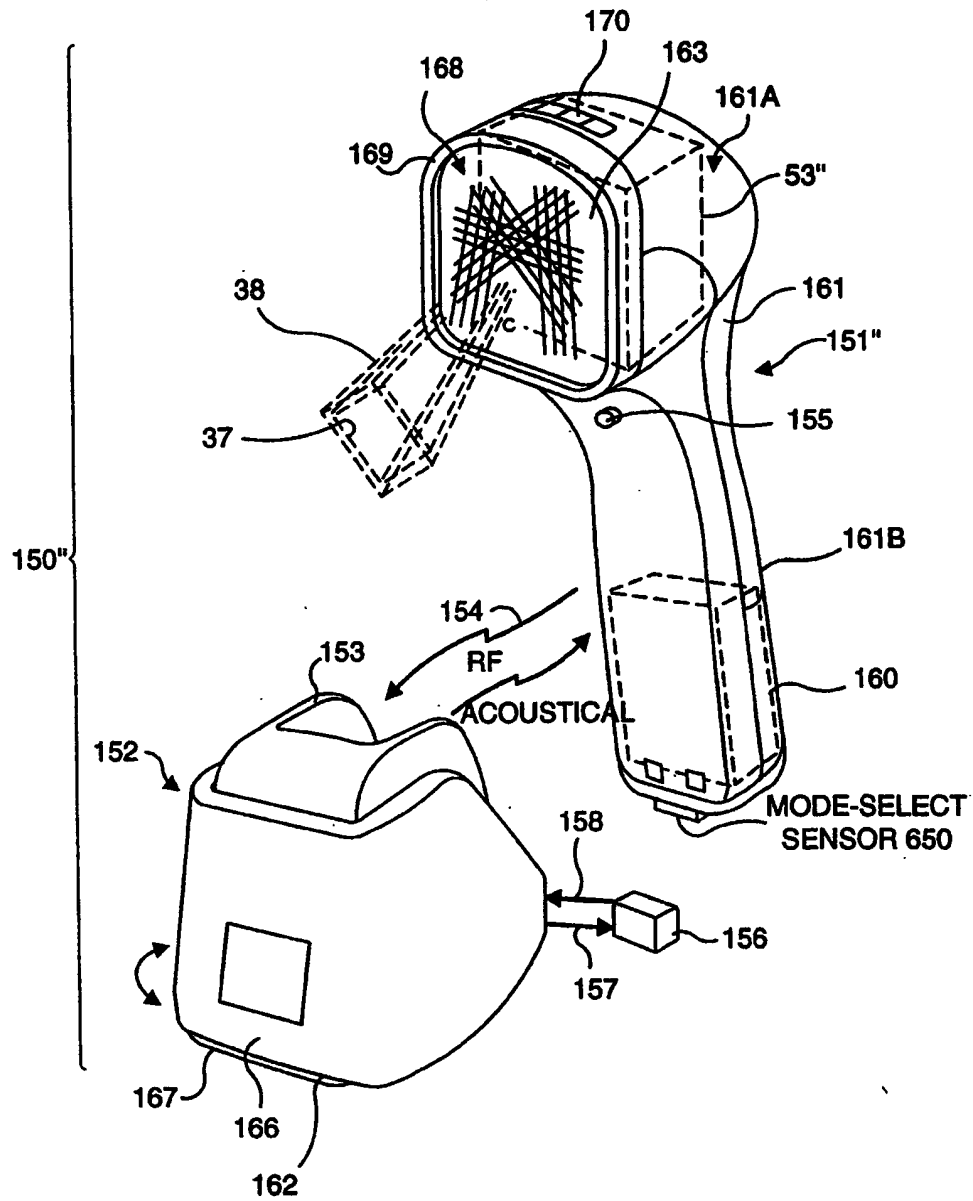


FIG. 7C

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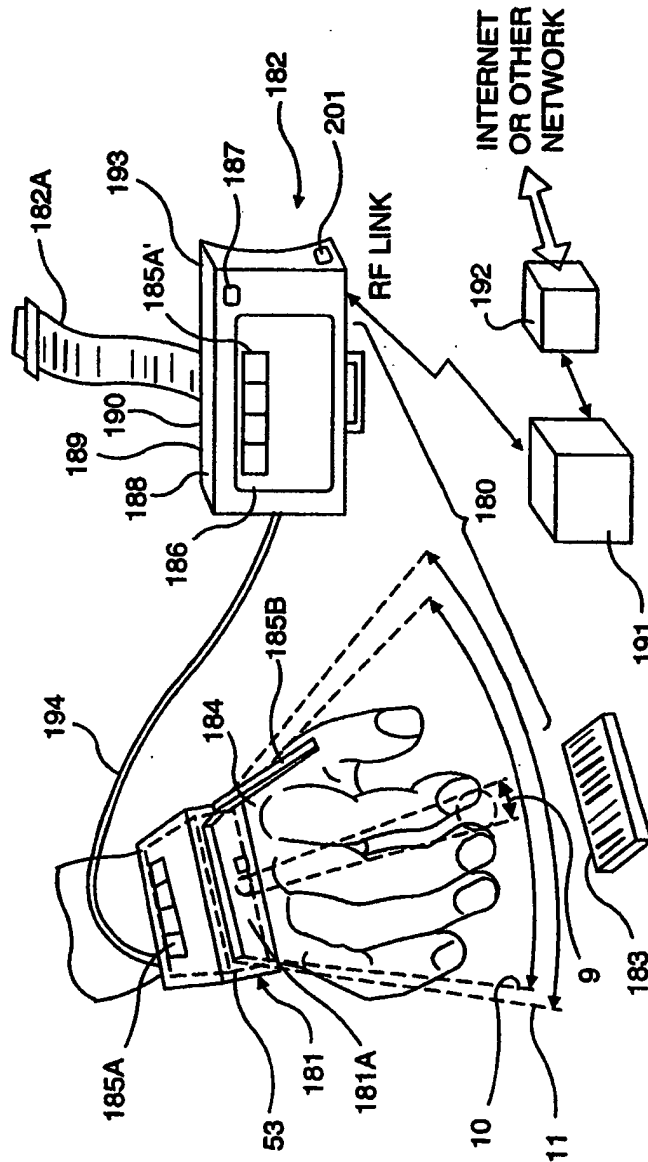


FIG. 8A

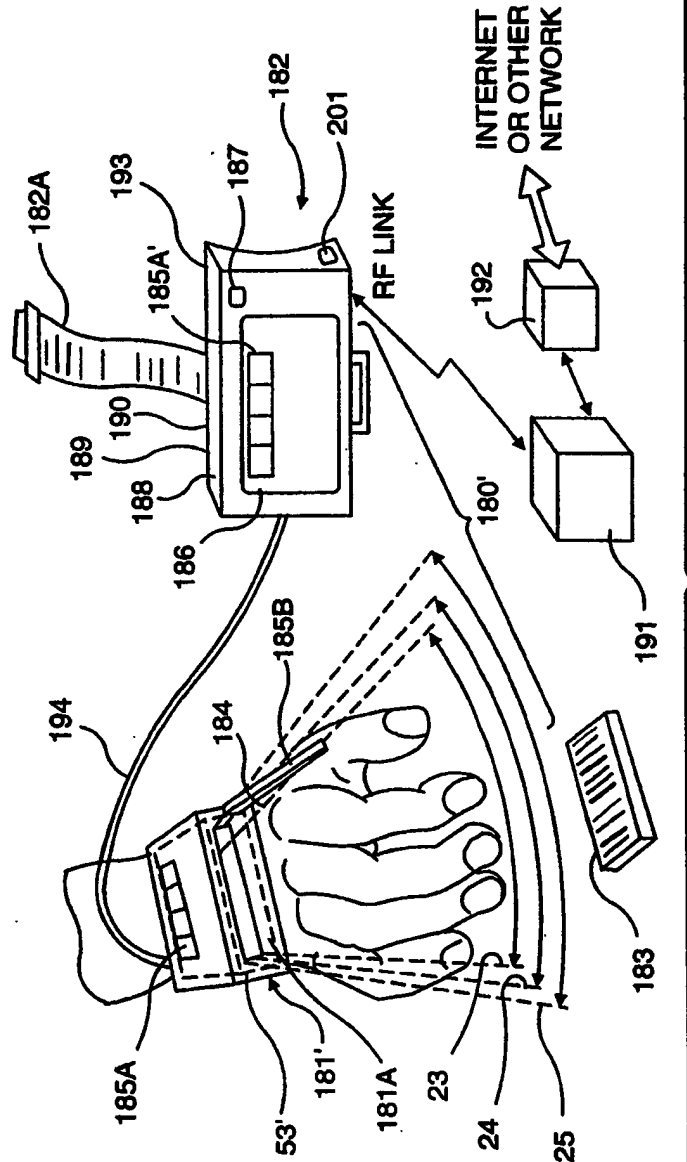


FIG. 8B

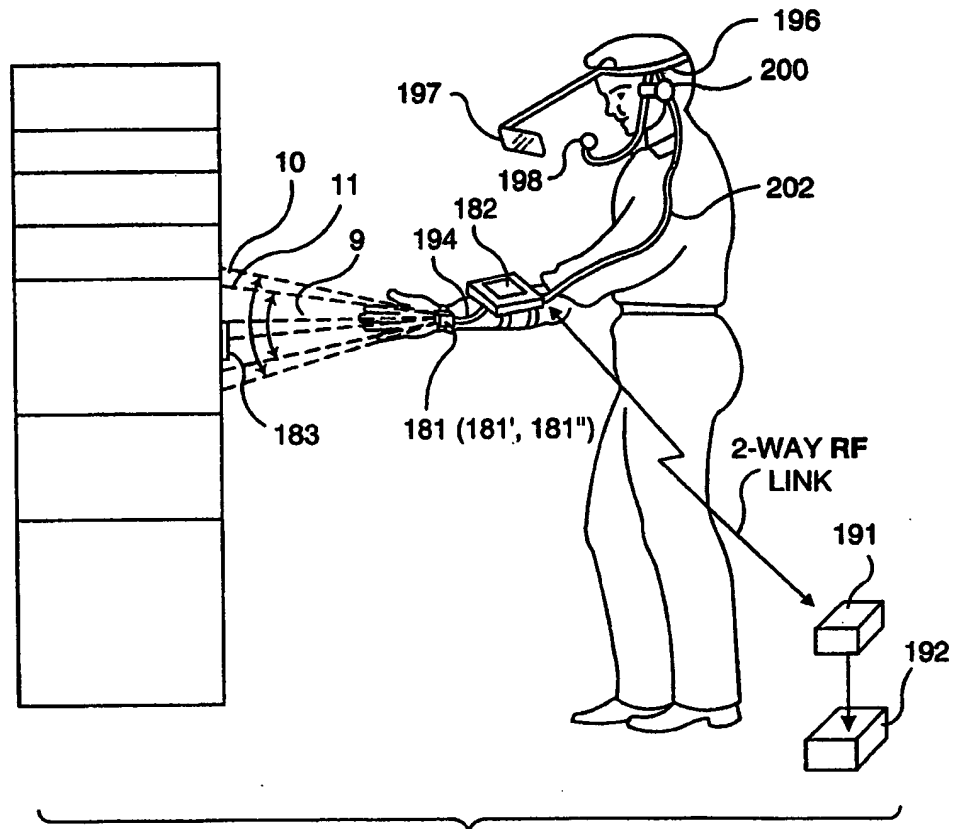


FIG. 8D

[illegible]

FIG. 8E2

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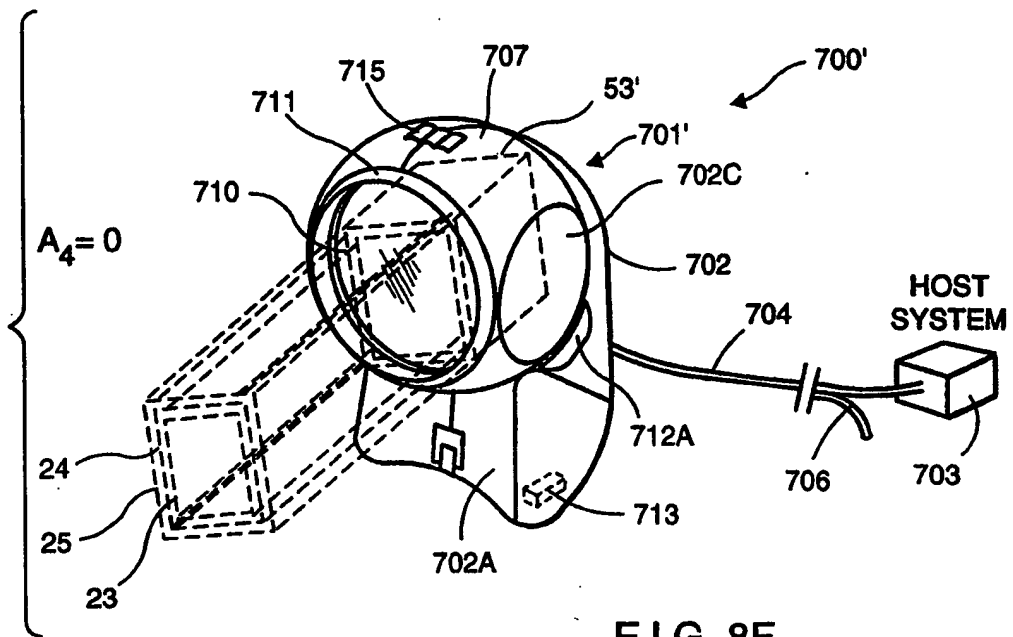


FIG. 8F

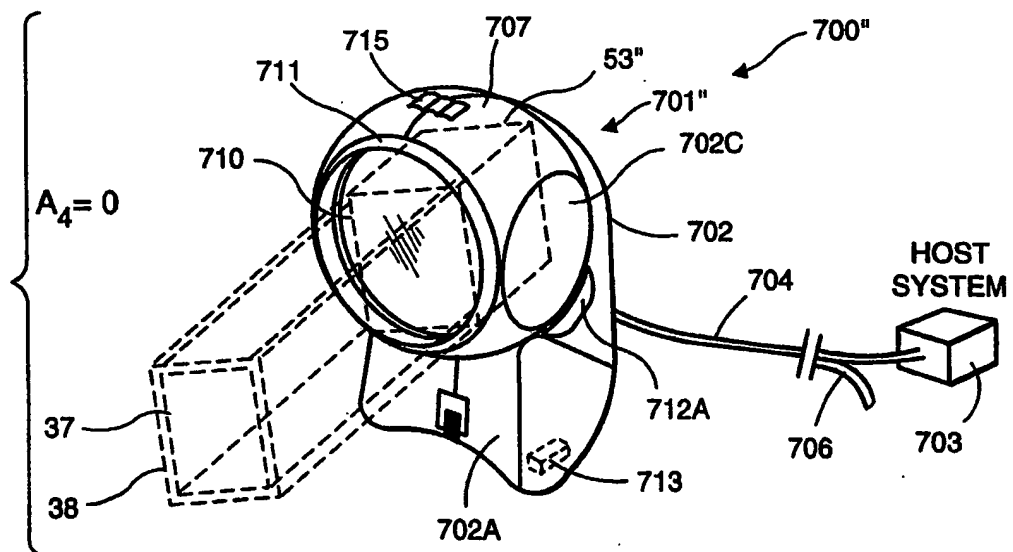


FIG. 8G

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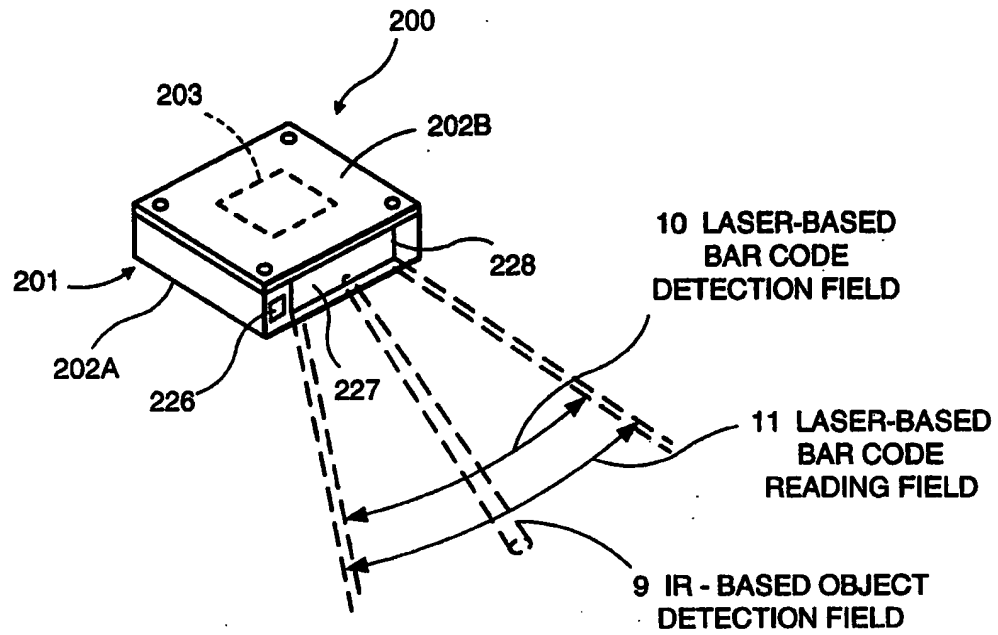


FIG. 9A

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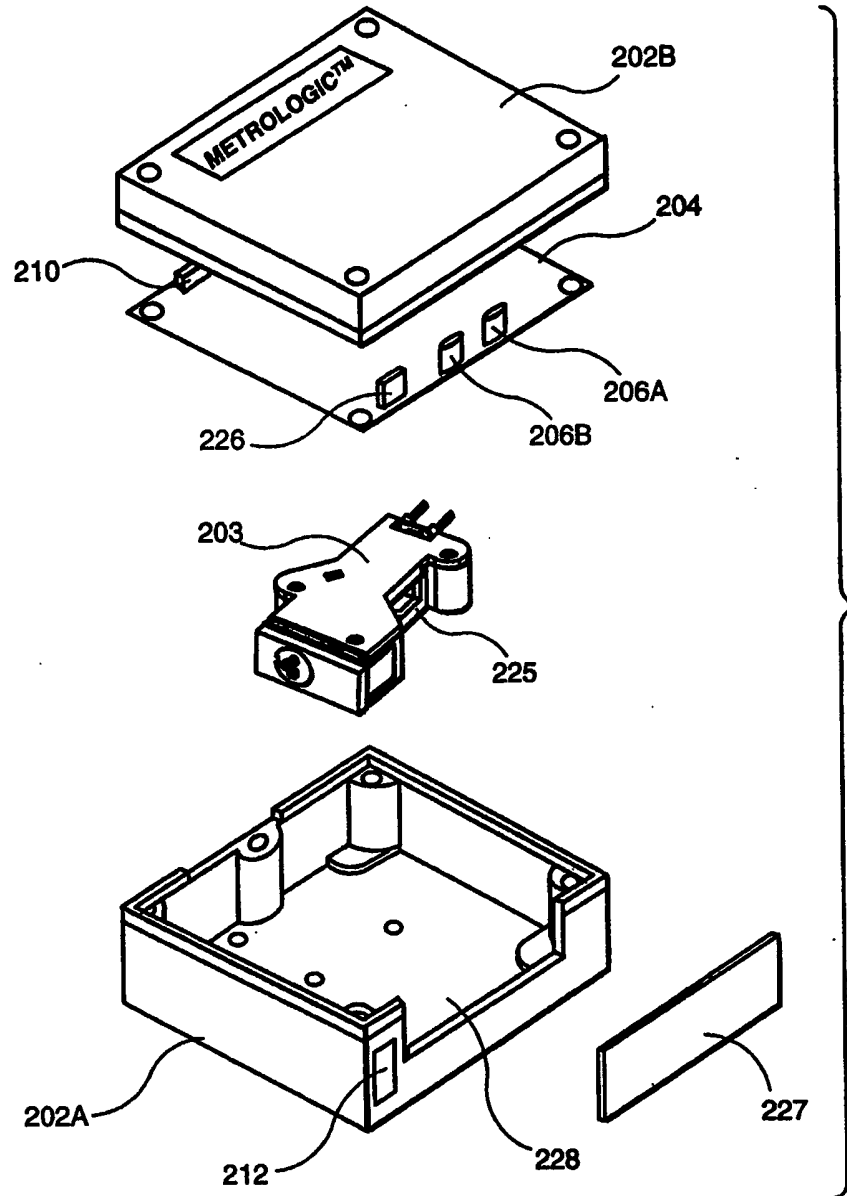


FIG. 9B

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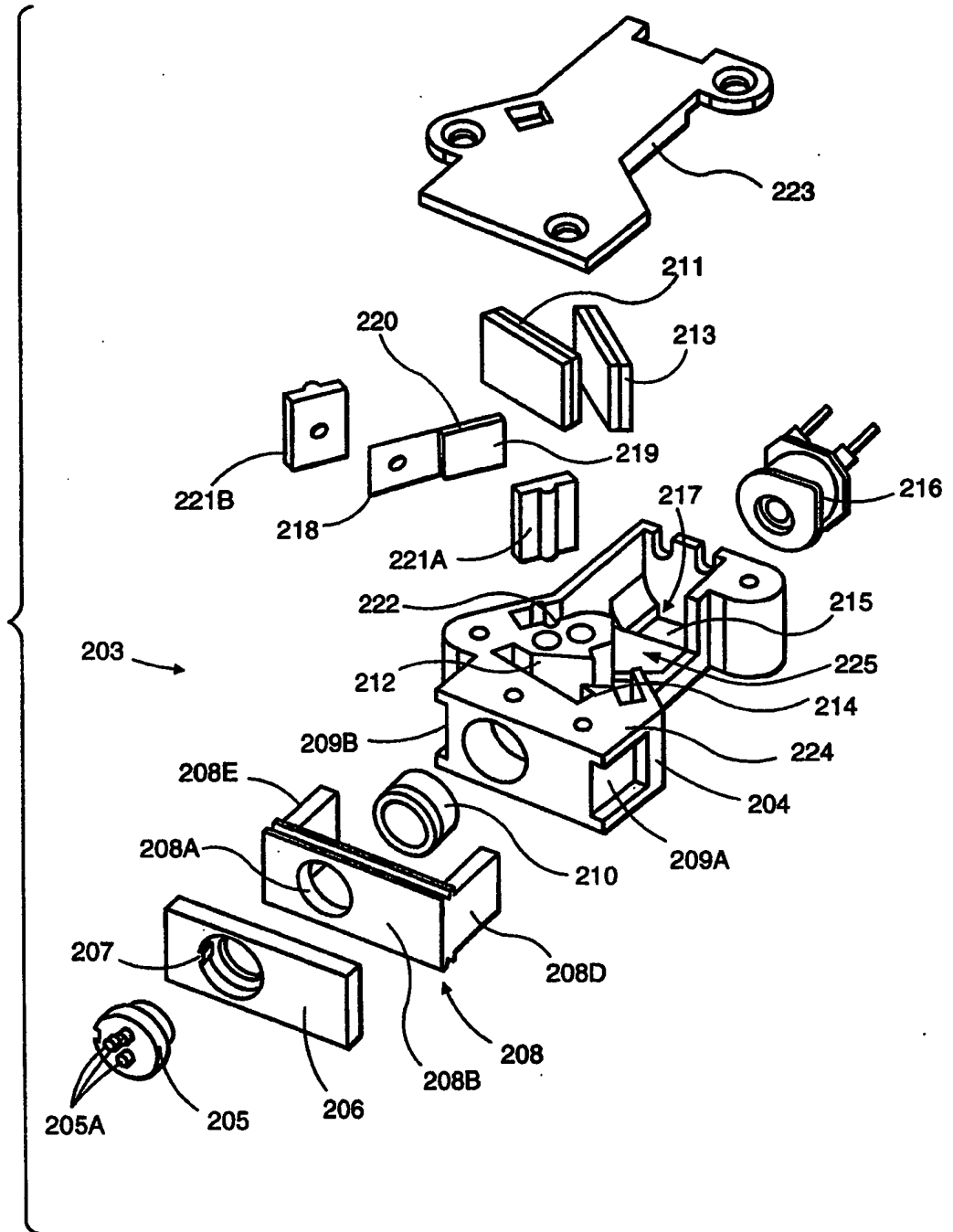


FIG. 9C

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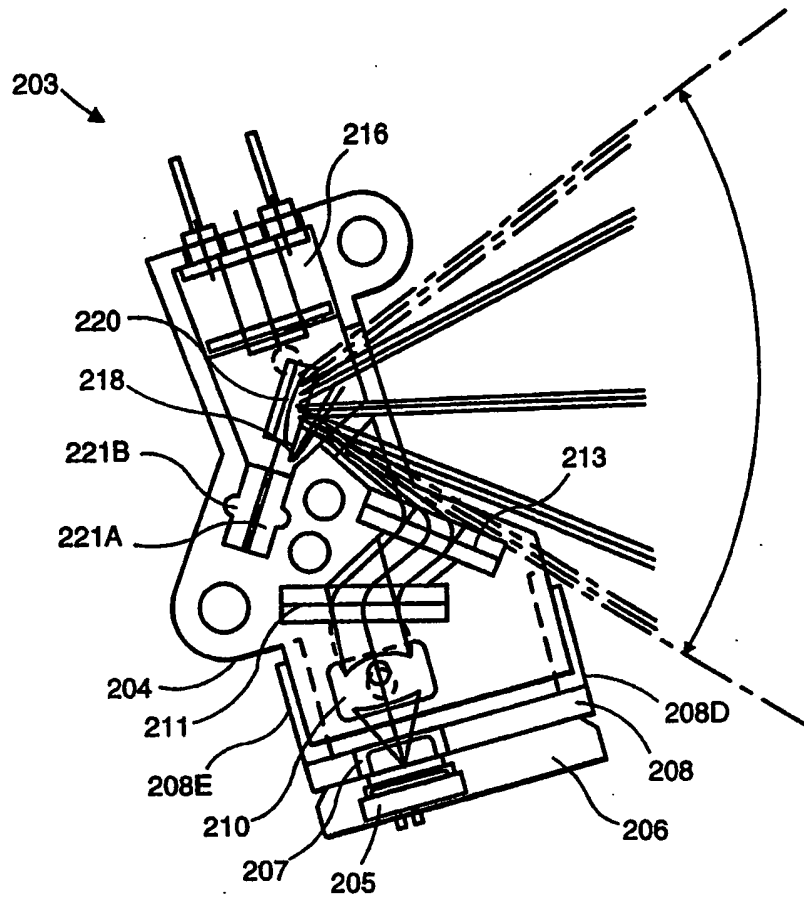


FIG. 9D

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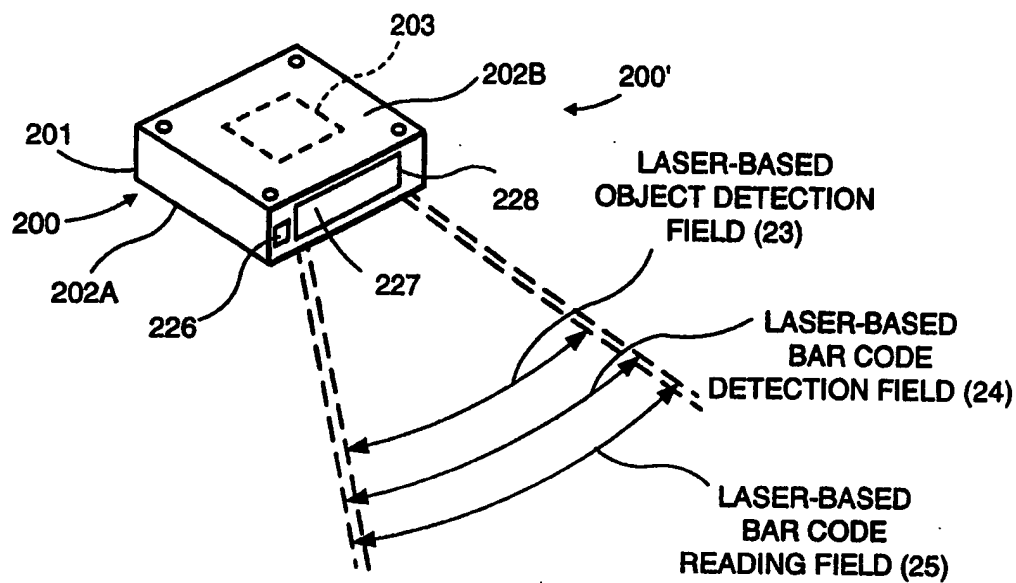


FIG. 9E

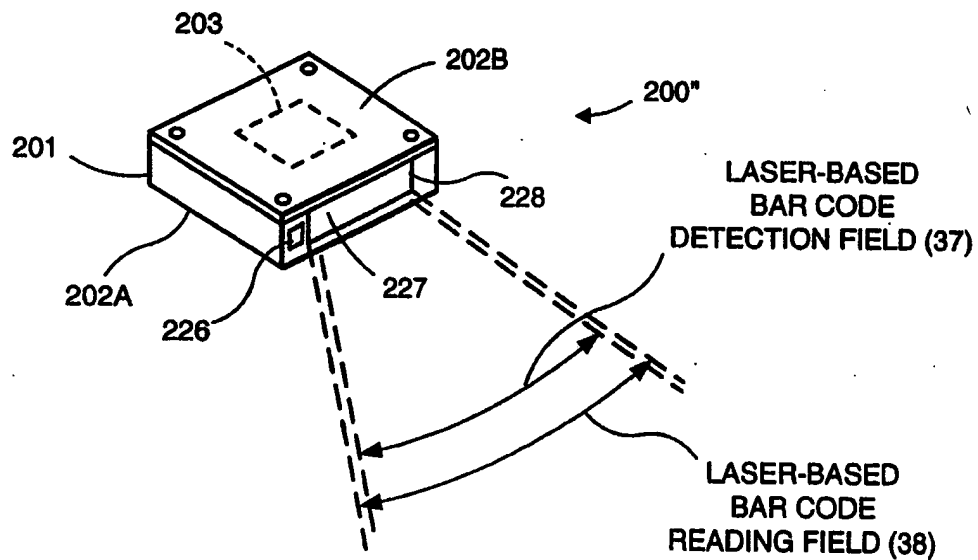


FIG. 9F

FIG. 10A

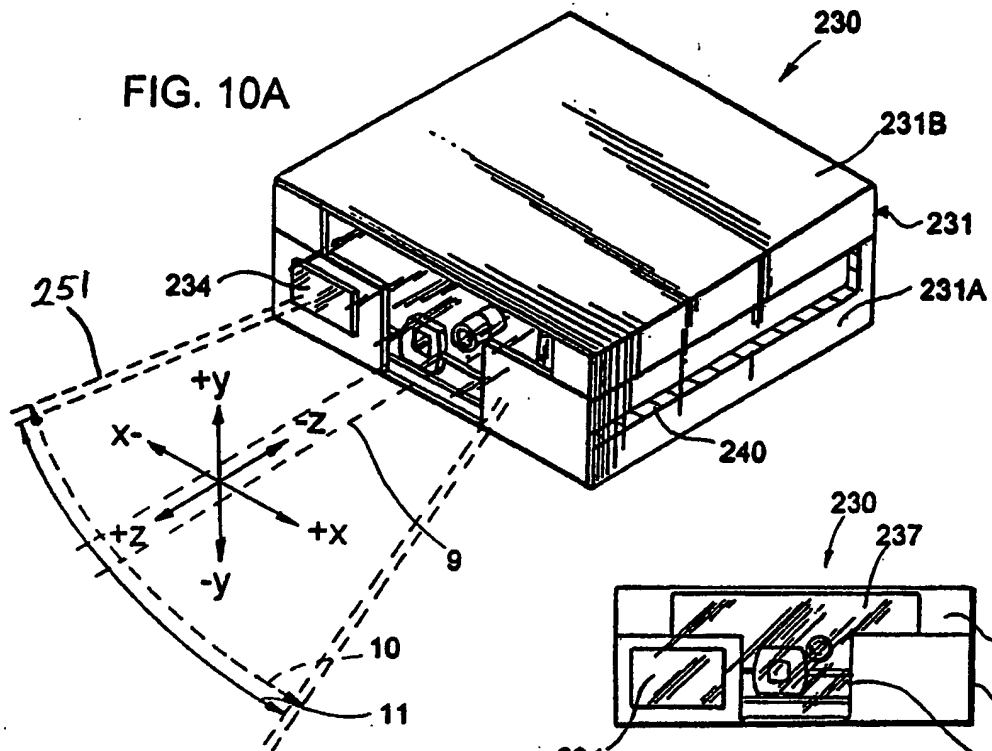


FIG. 10B

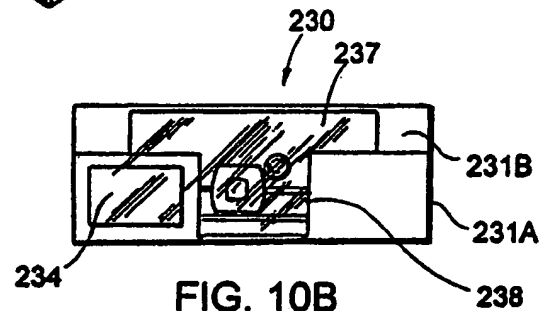


FIG. 10C

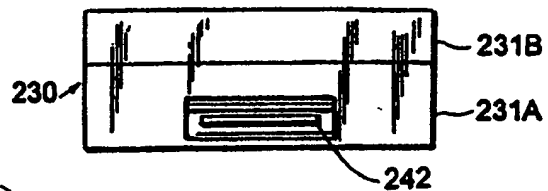
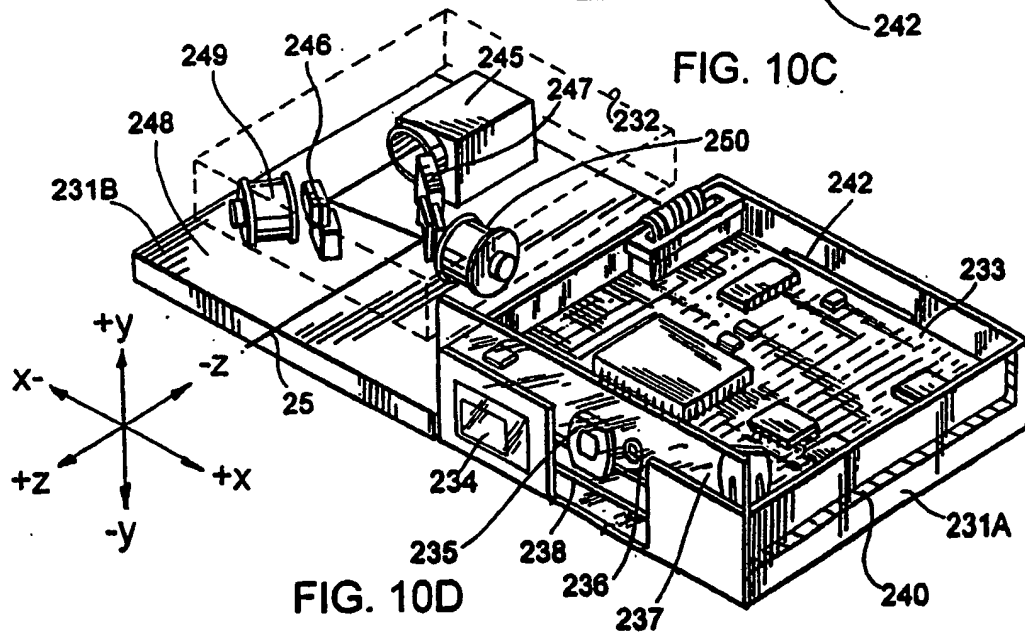


FIG. 10D



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FIG. 10E

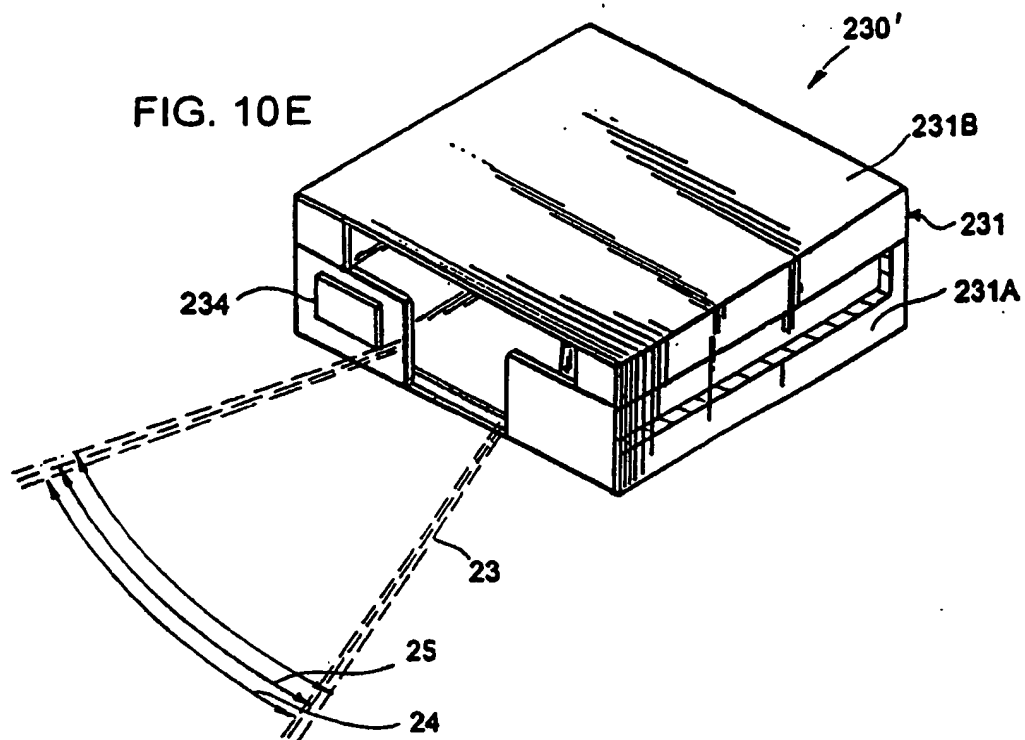
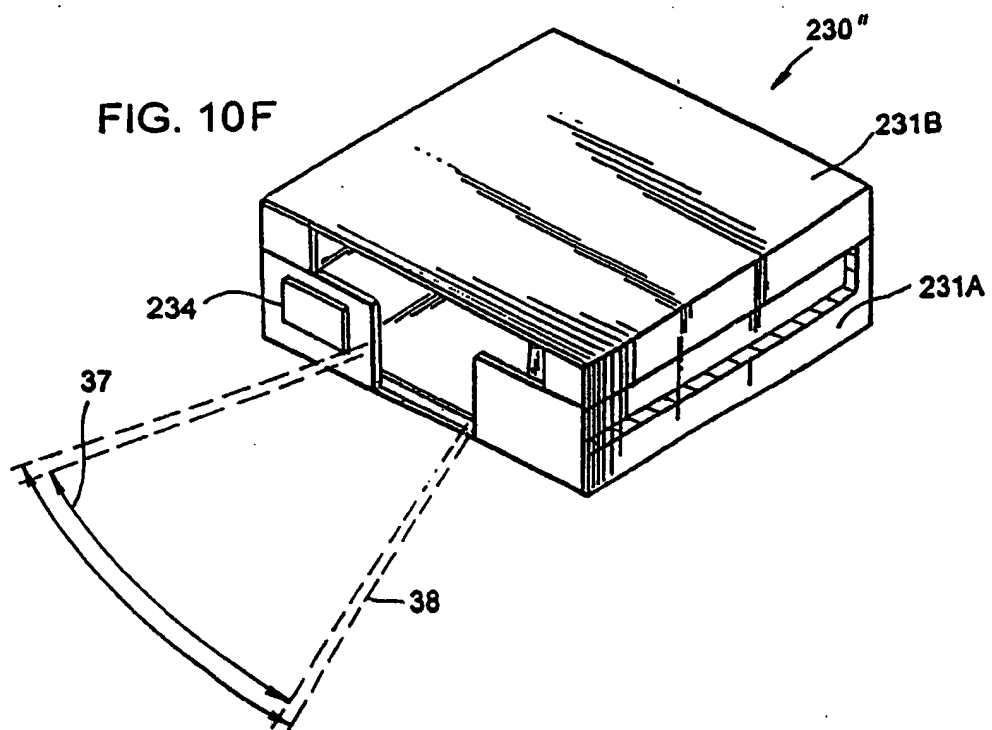


FIG. 10F



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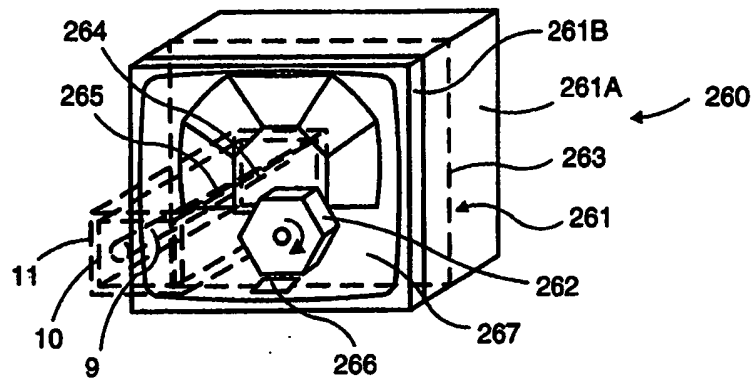


FIG. 11A

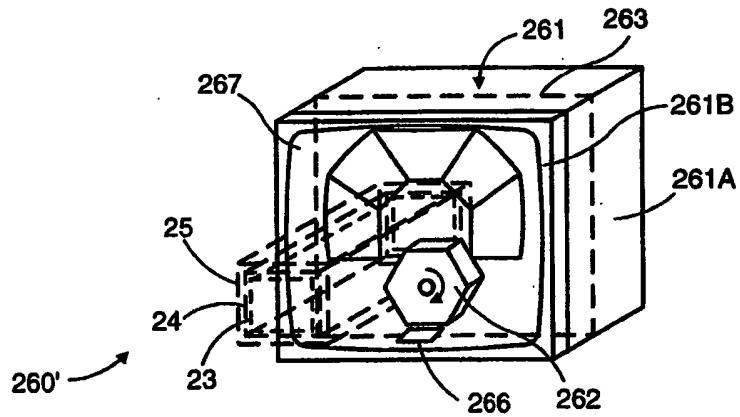


FIG. 11B

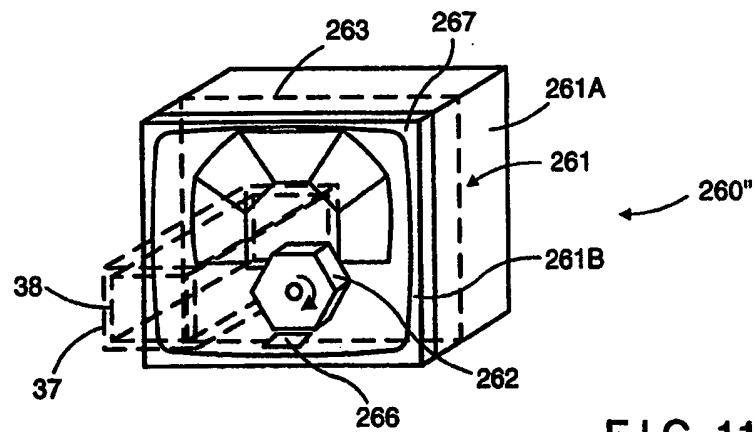


FIG. 11C

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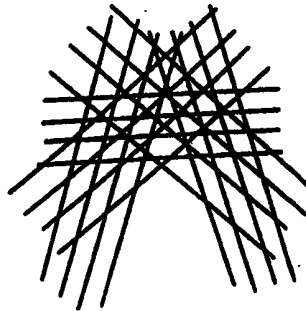


FIG. 12A

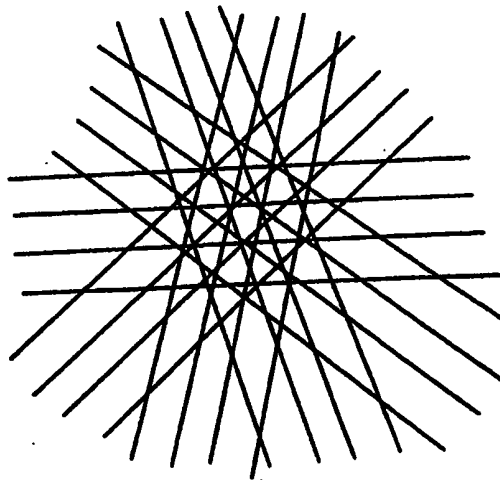
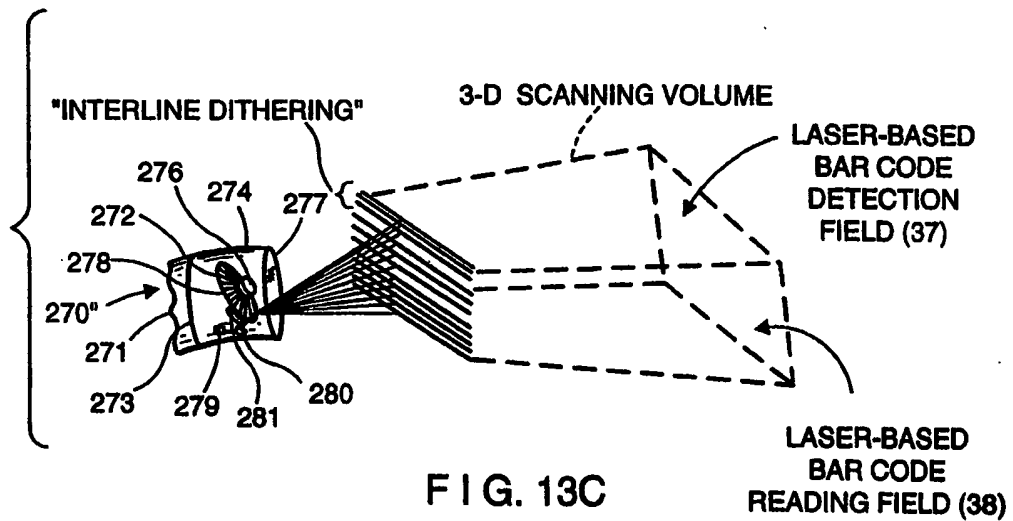
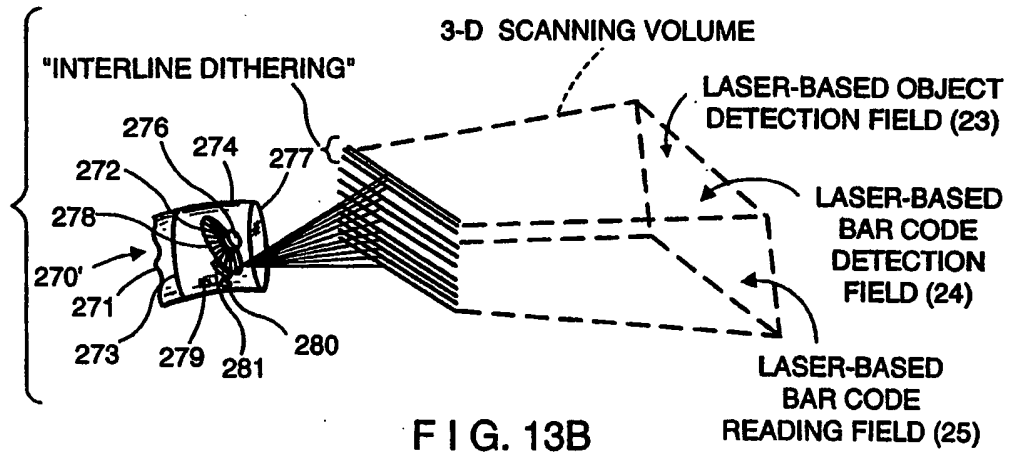
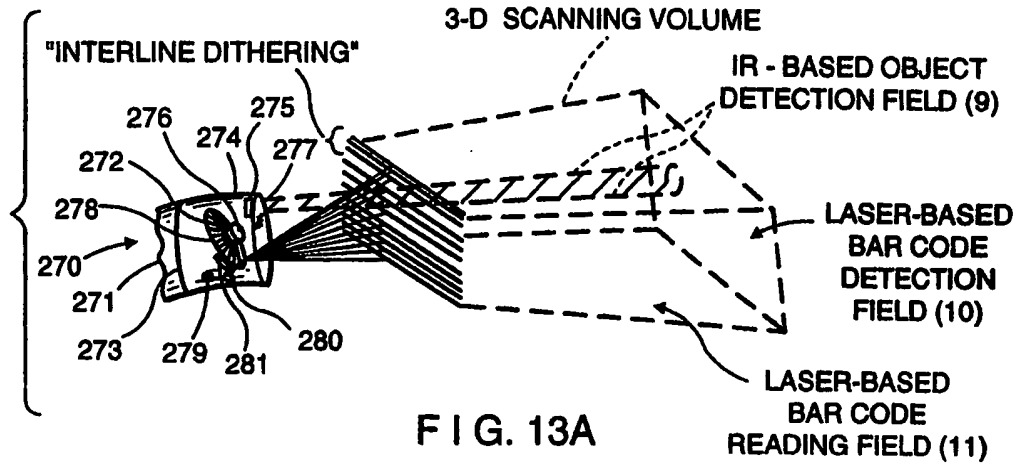
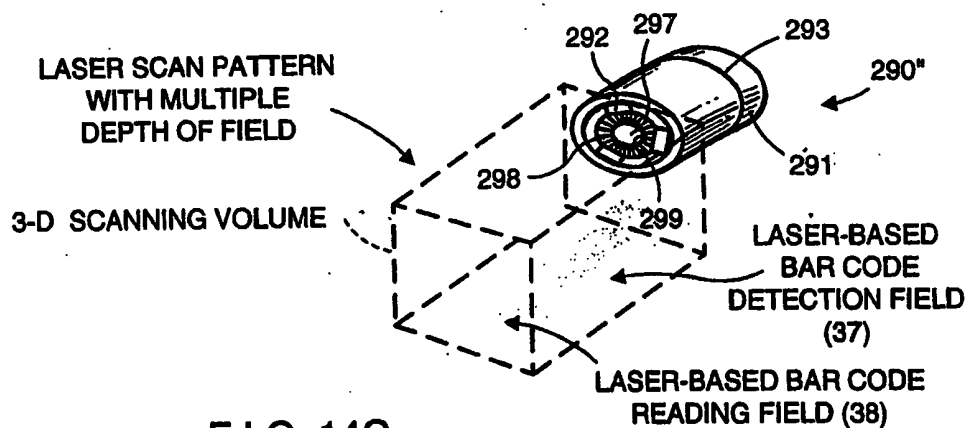
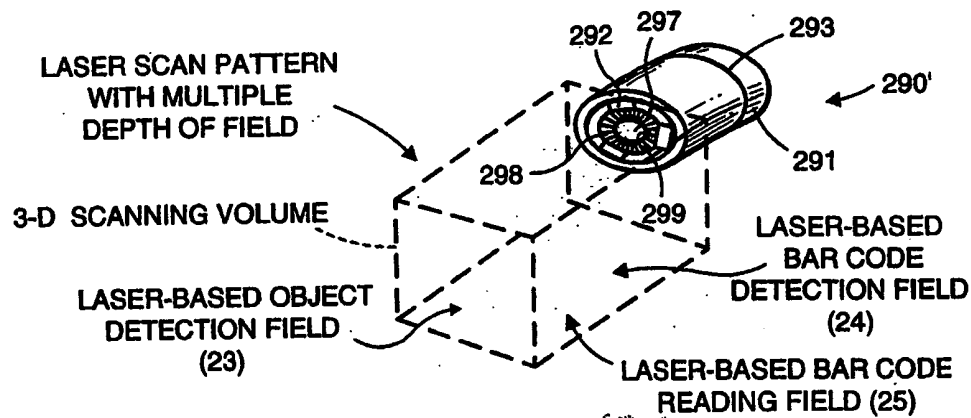
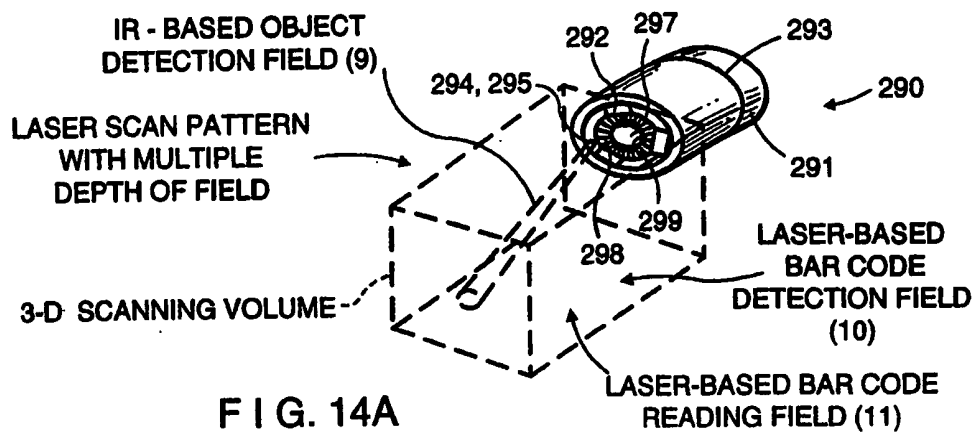


FIG. 12B

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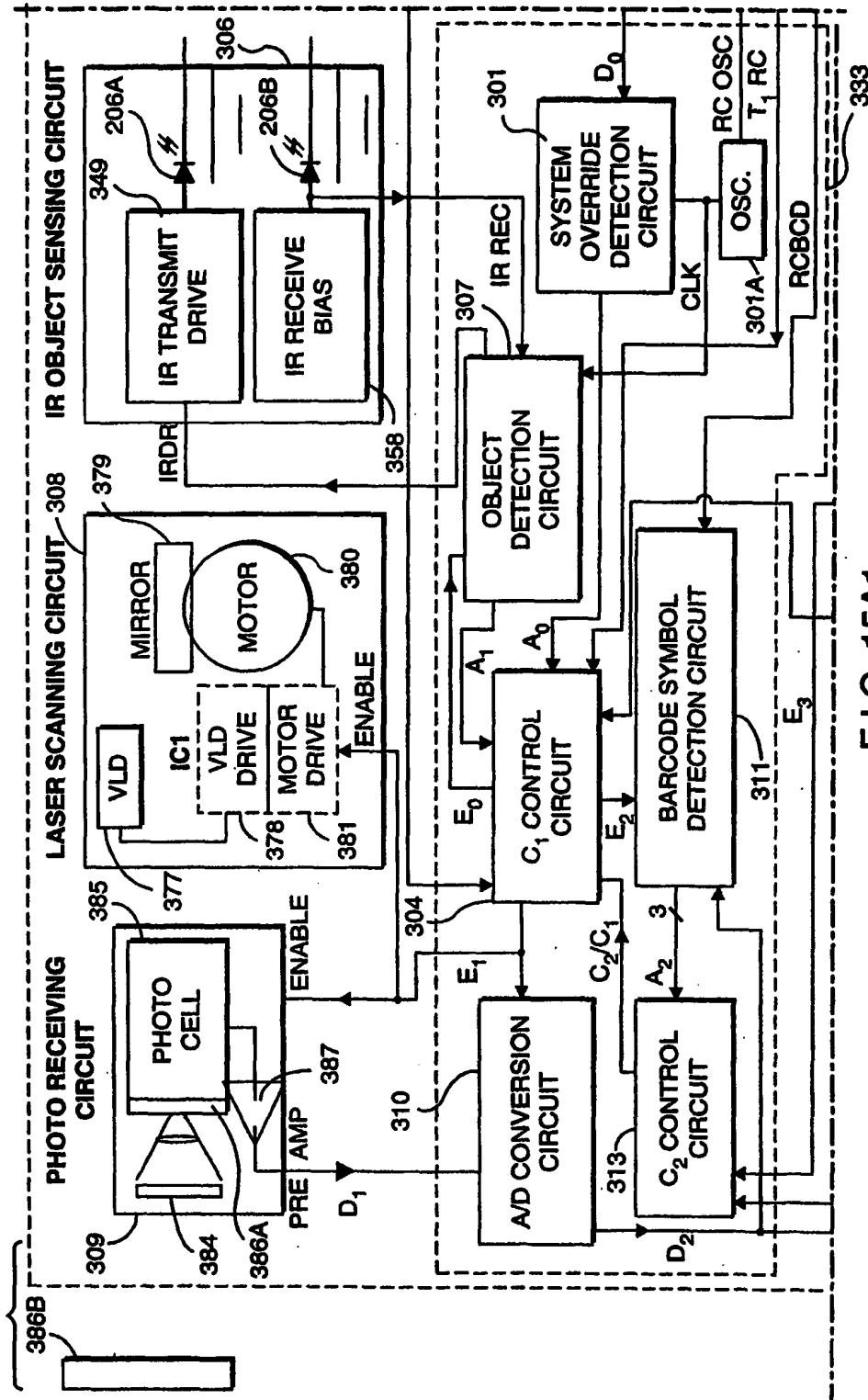


FIG. 15A1

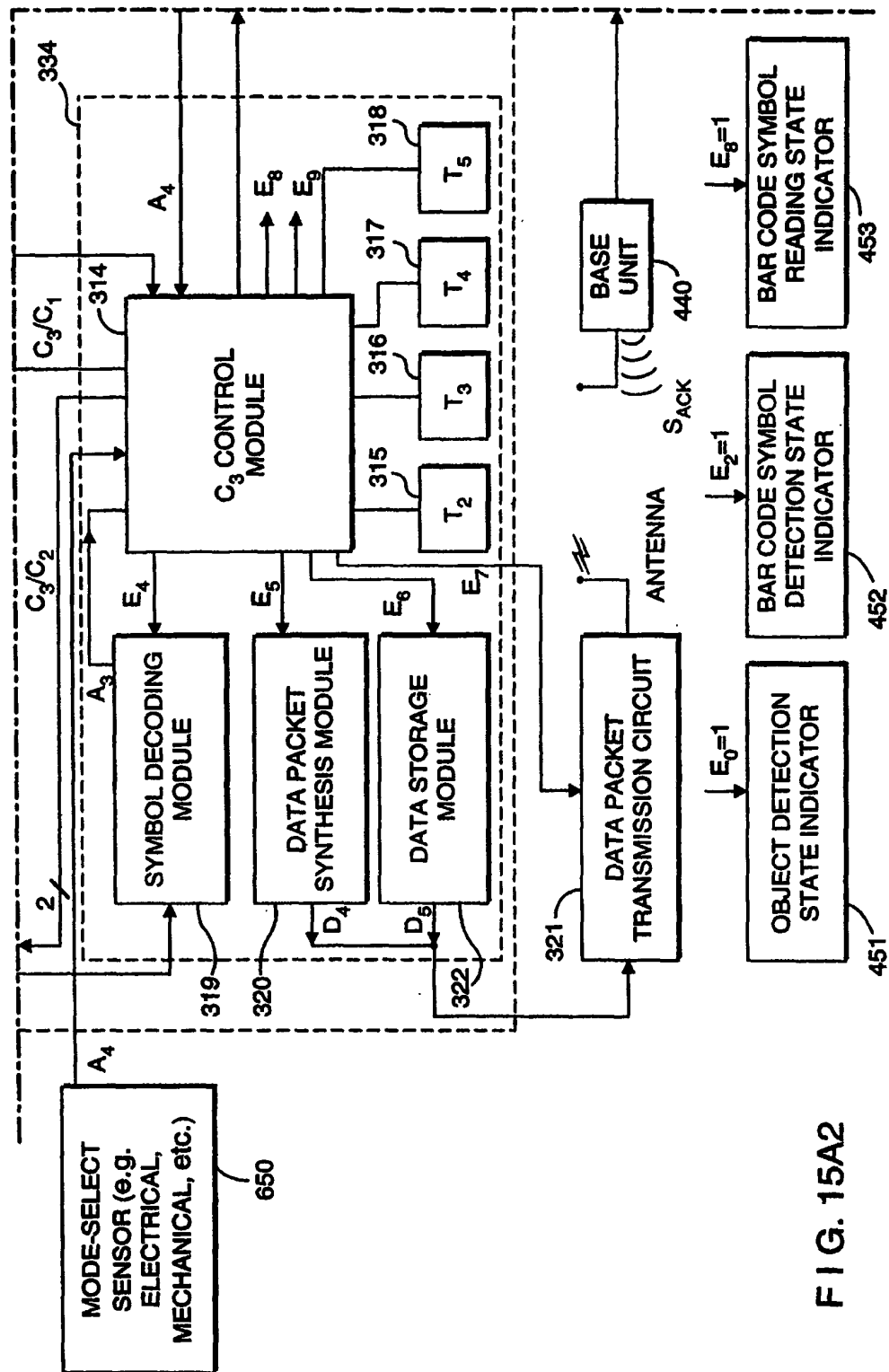


FIG. 15A2

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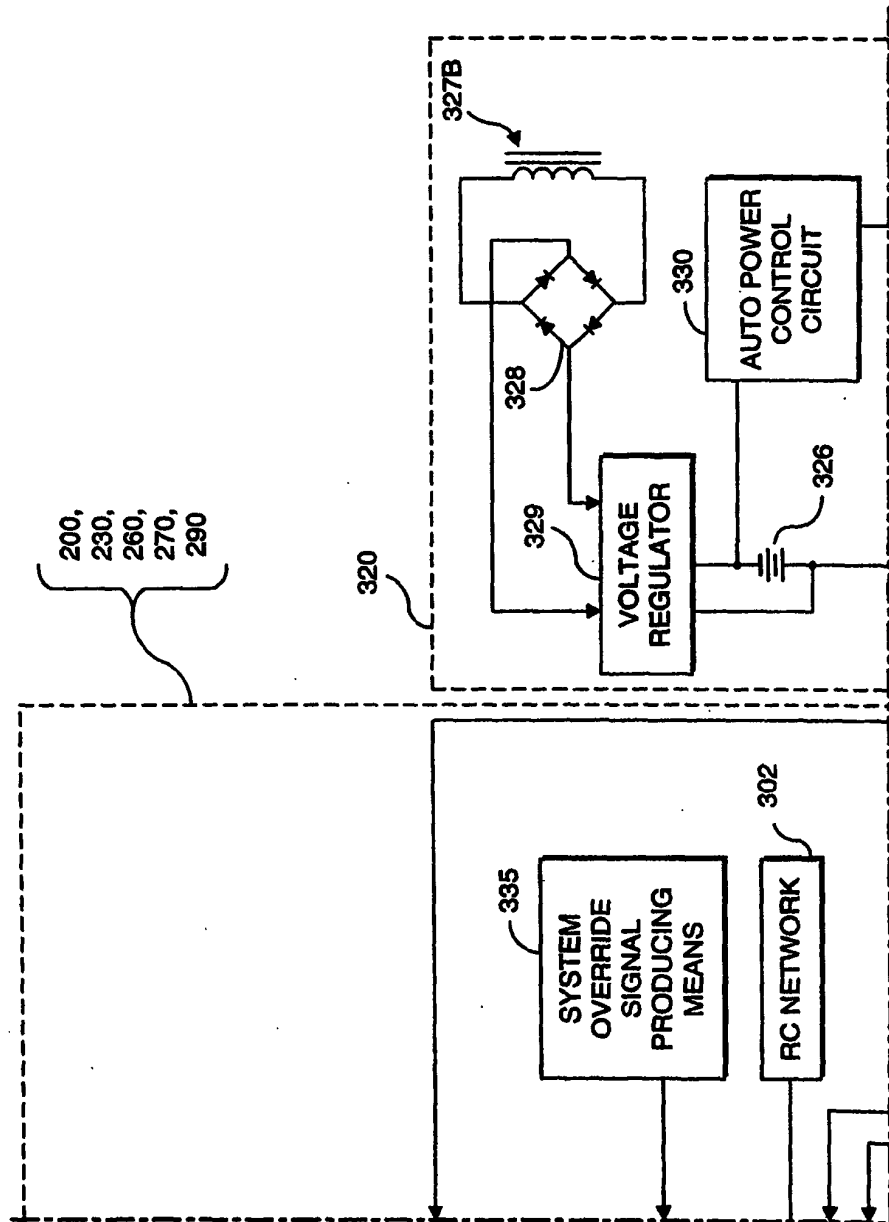


FIG. 15A3

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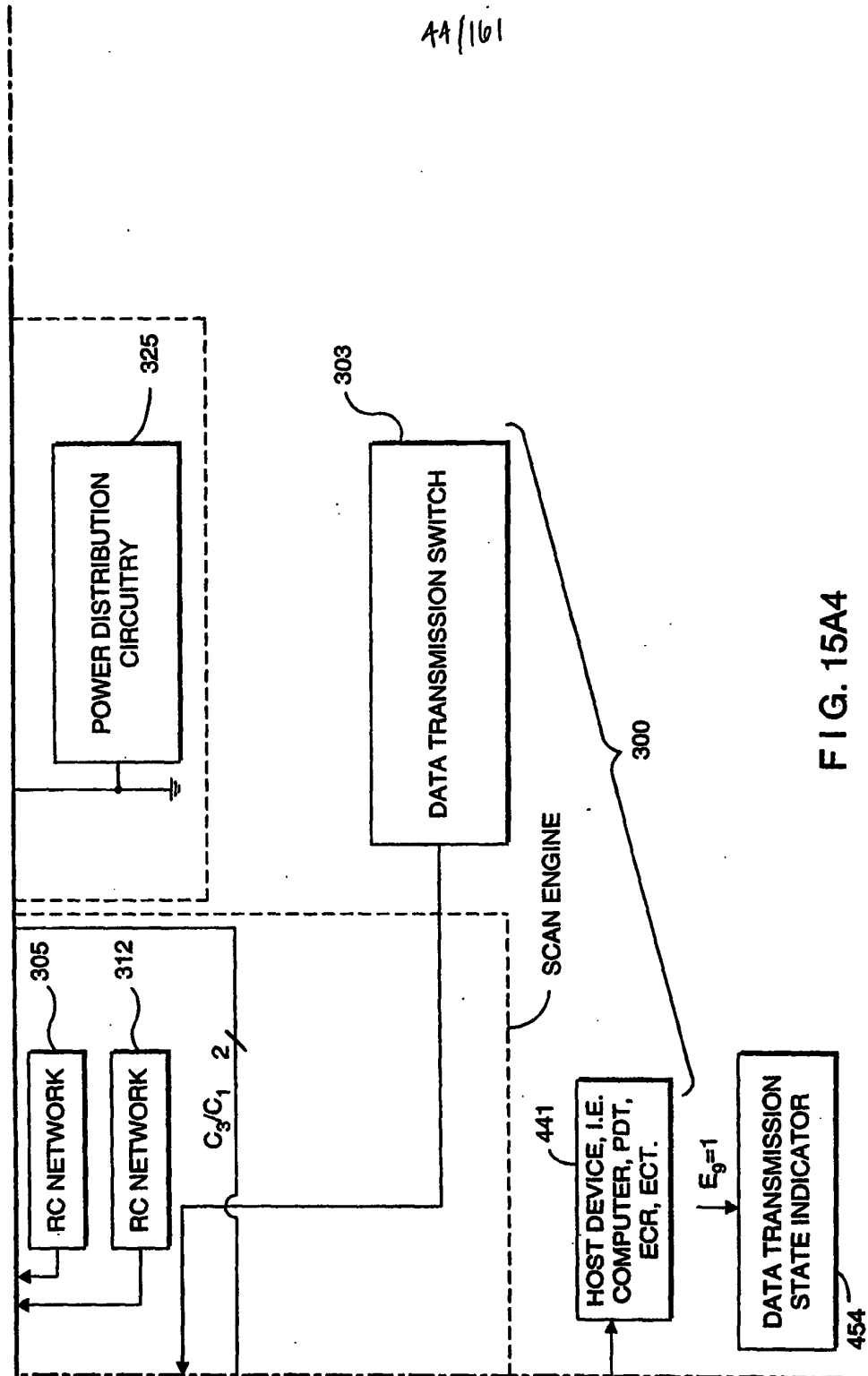


FIG. 15A4

45 | 16 |

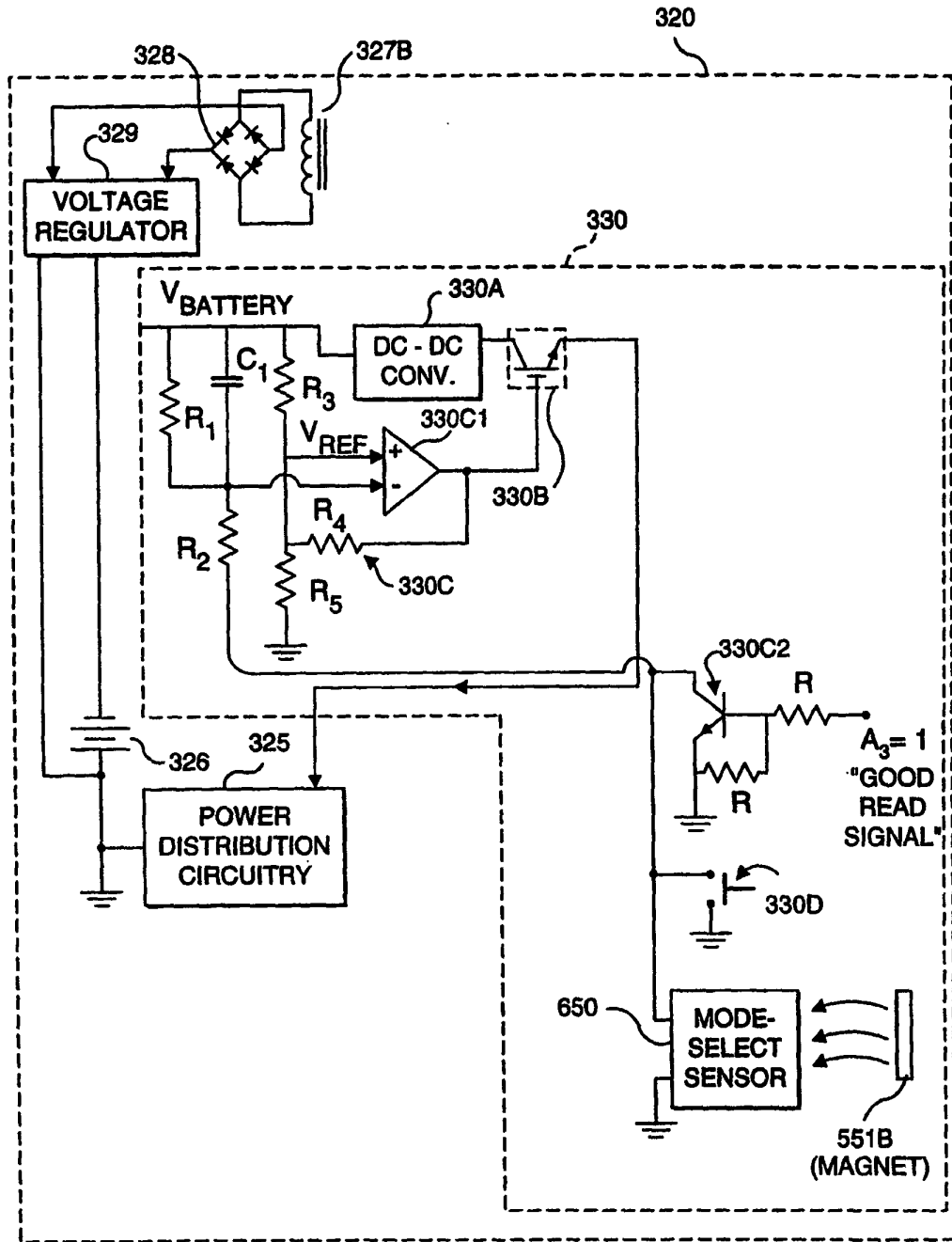


FIG. 15B1

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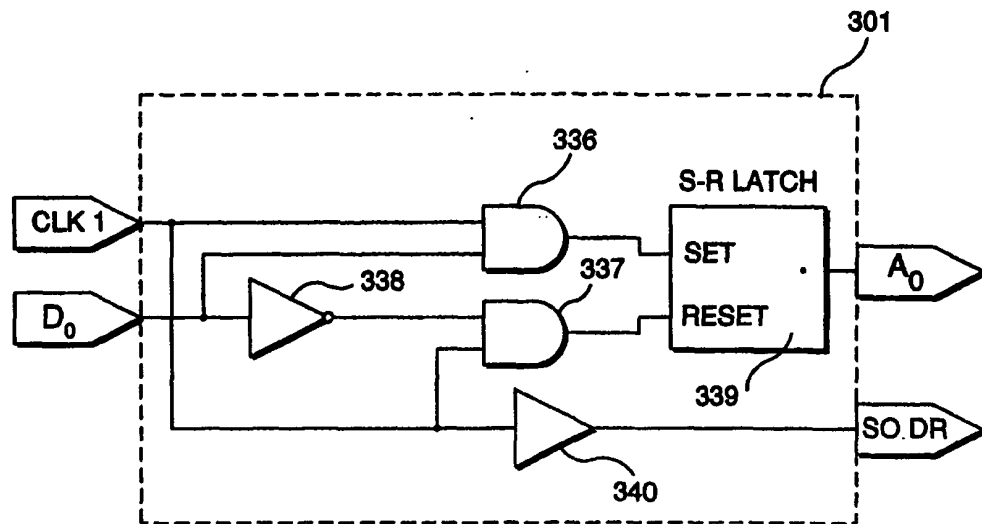


FIG. 15B2

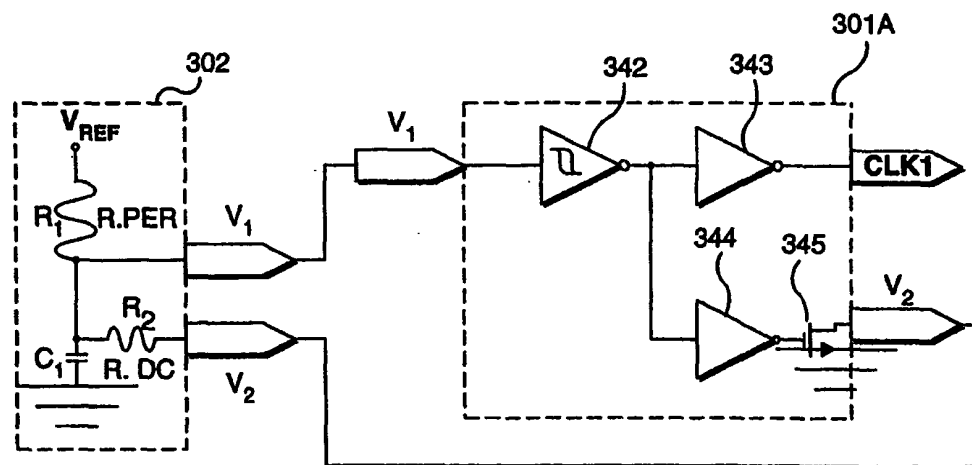


FIG. 15C

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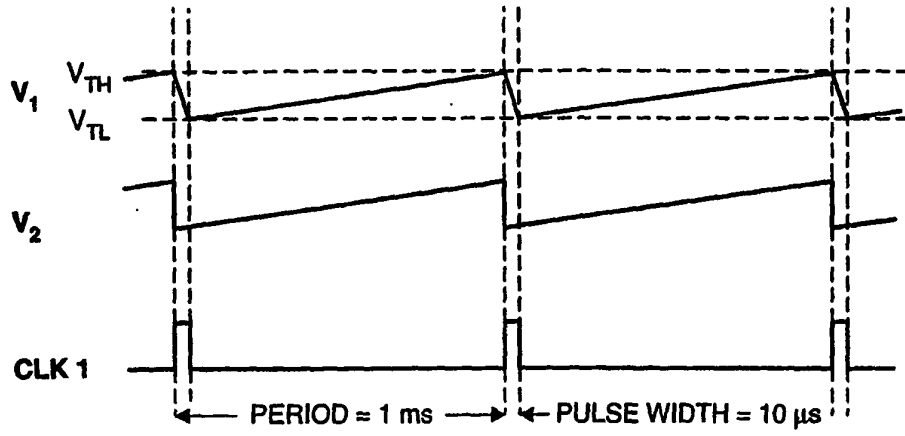


FIG. 15D

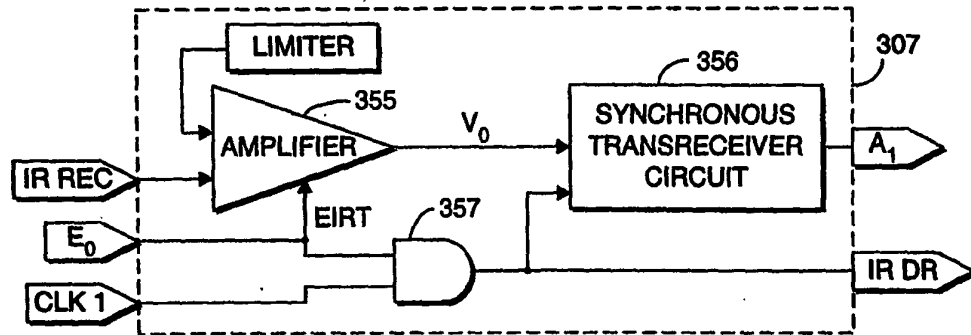


FIG. 15E

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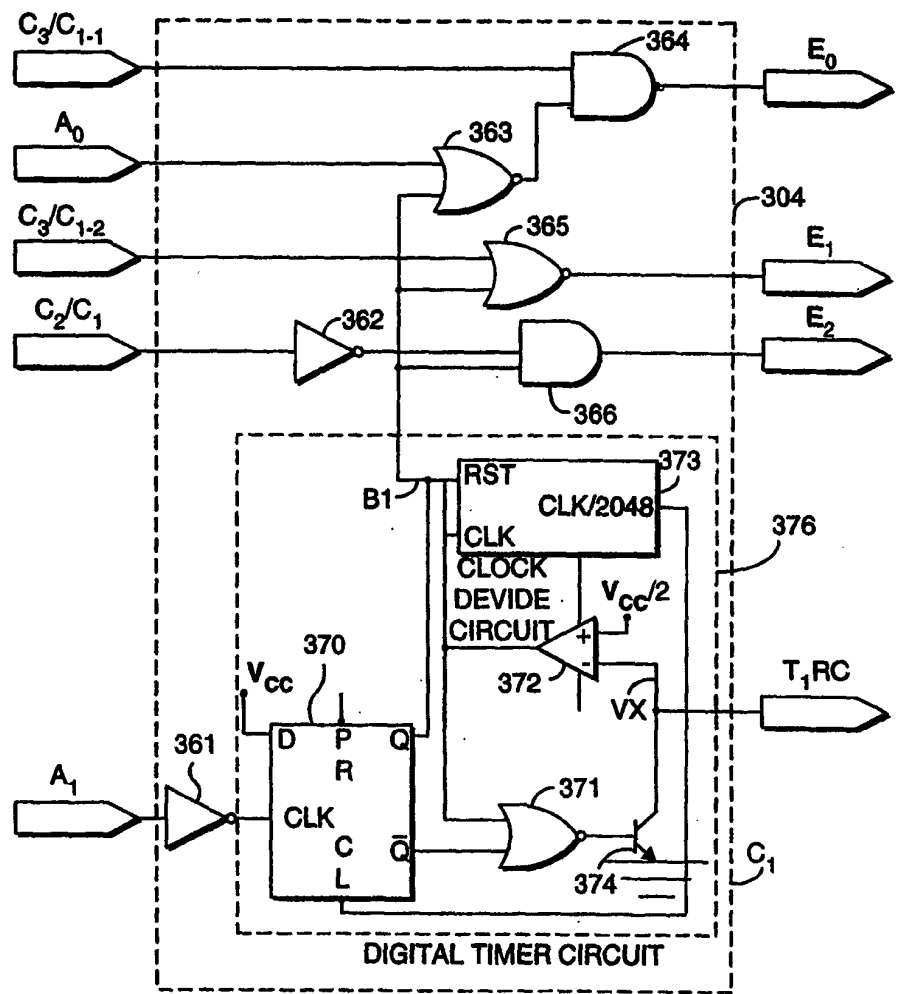


FIG. 15F

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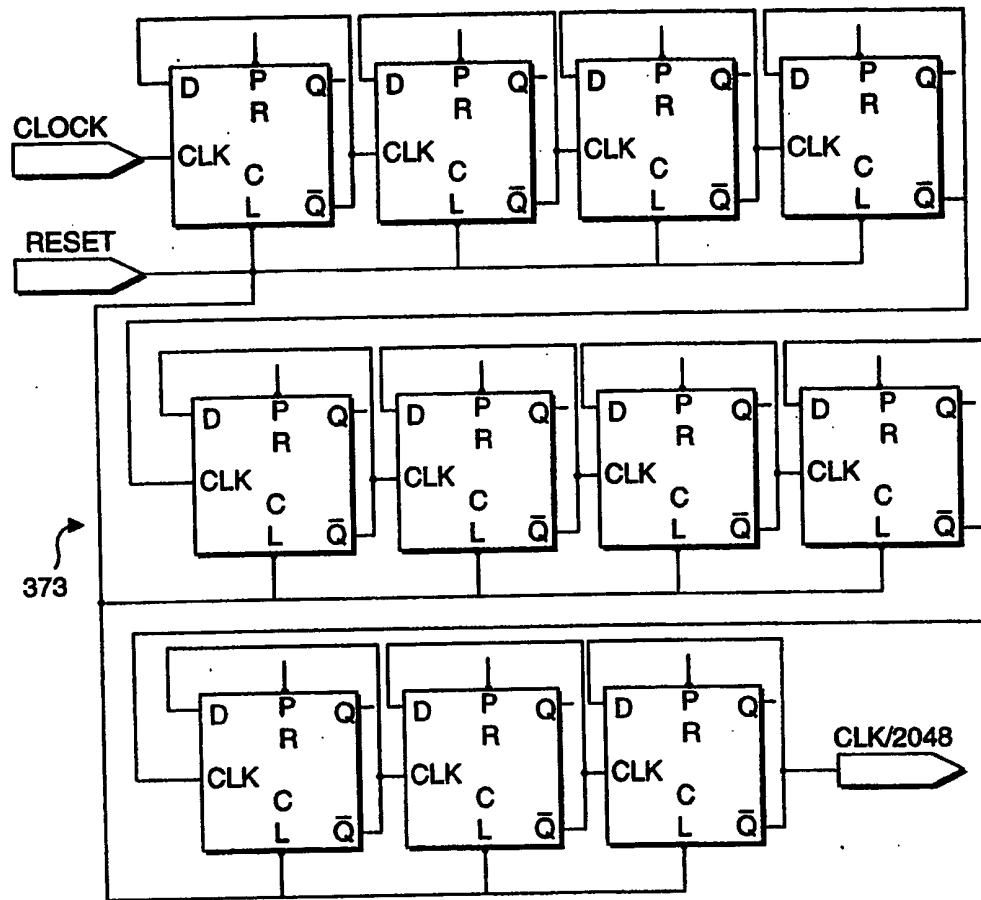


FIG. 15G

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$$\left. \begin{aligned} E_0 &= (B1 + A_0) (C_3 / C_{1-1}) \\ E_1 &= (C_3 / C_{1-2}) + B1 \\ E_2 &= (C_2 / C_1) (T_1) \end{aligned} \right\}$$

FIG. 15H

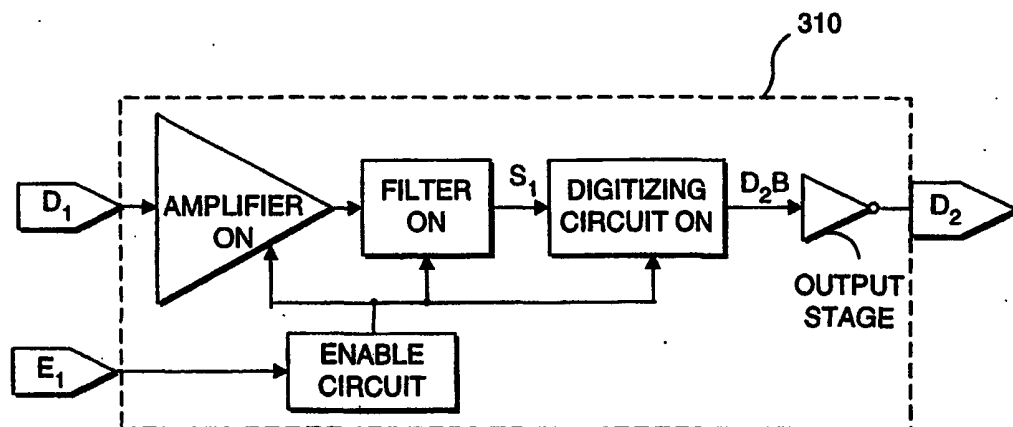


FIG. 15I

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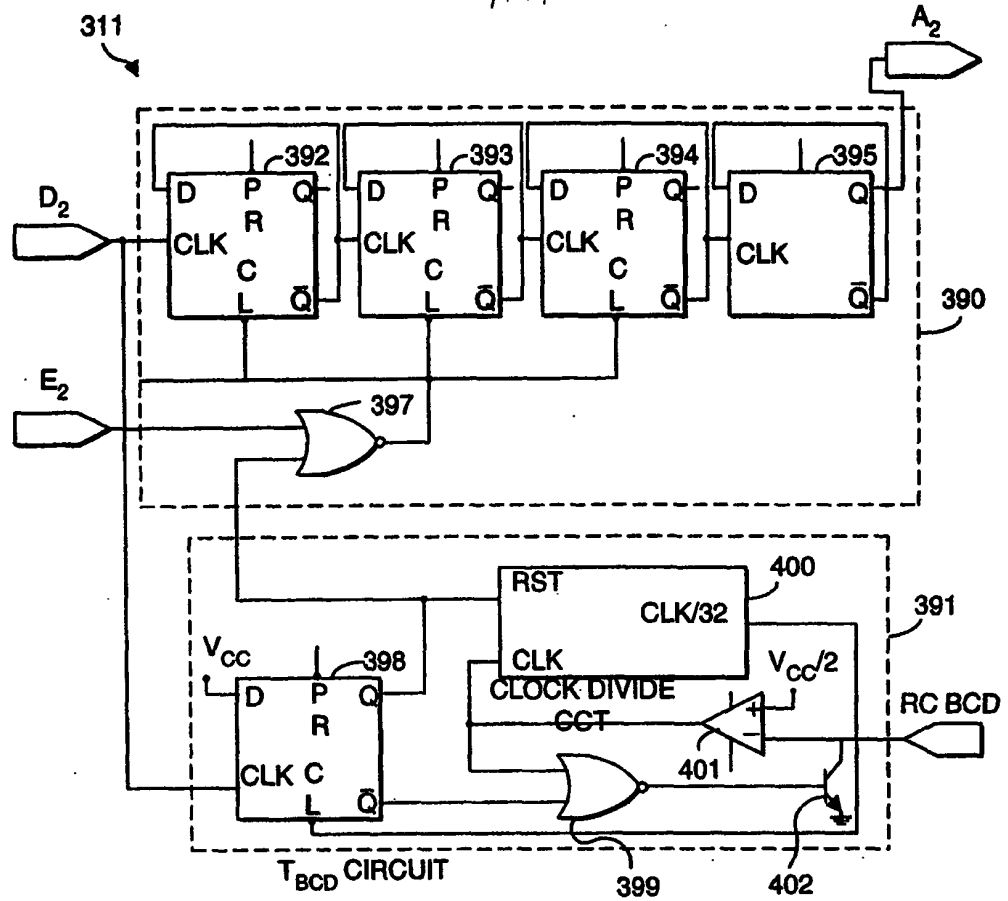


FIG. 15J

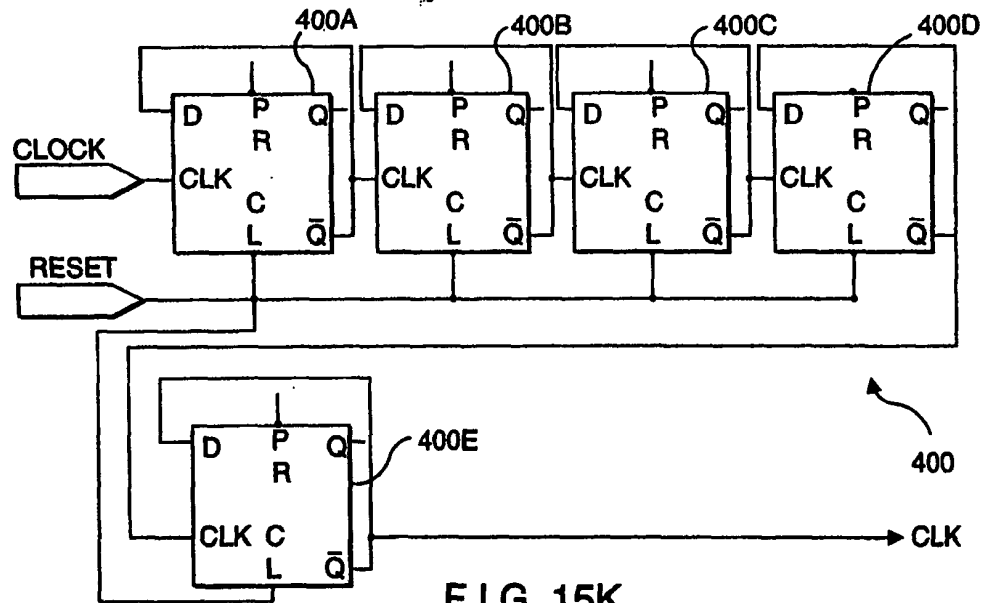


FIG. 15K

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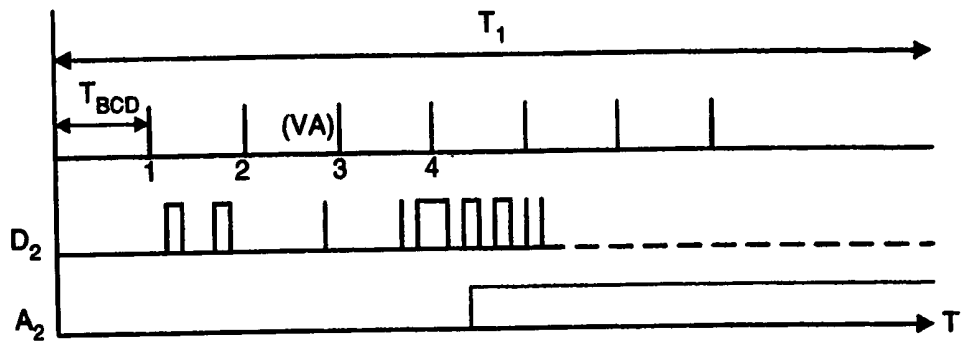


FIG. 15L

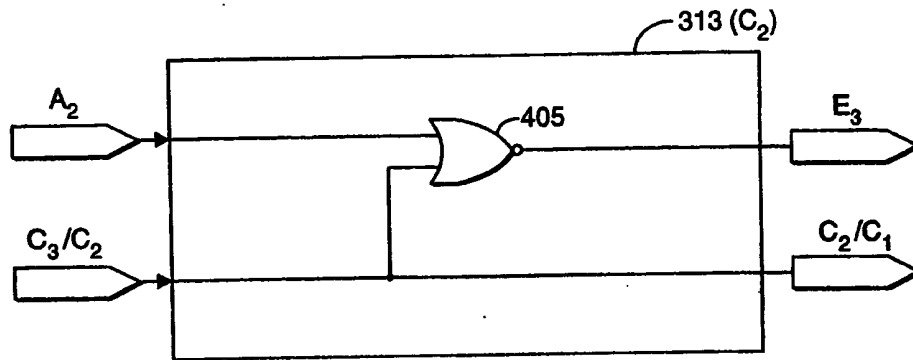


FIG. 15M

C_3/C_2	A_2	E_3	C_2/C_1
0	0	0	0
0	1	1	0
1	X	1	1

X: DON'T CARE (I.E. C_3/C_2 OVERRIDES A_2)

FIG. 15N

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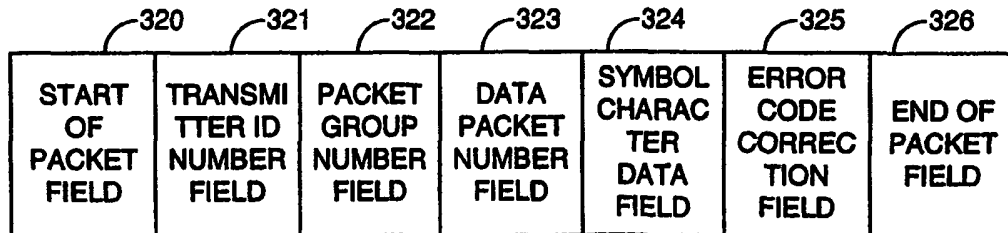


FIG. 150

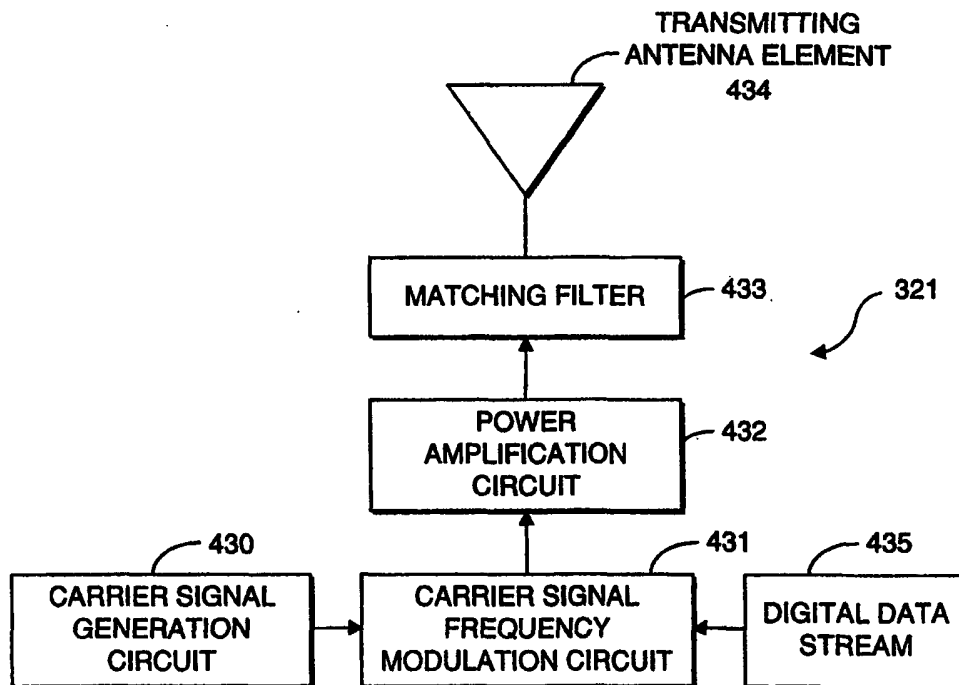


FIG. 16

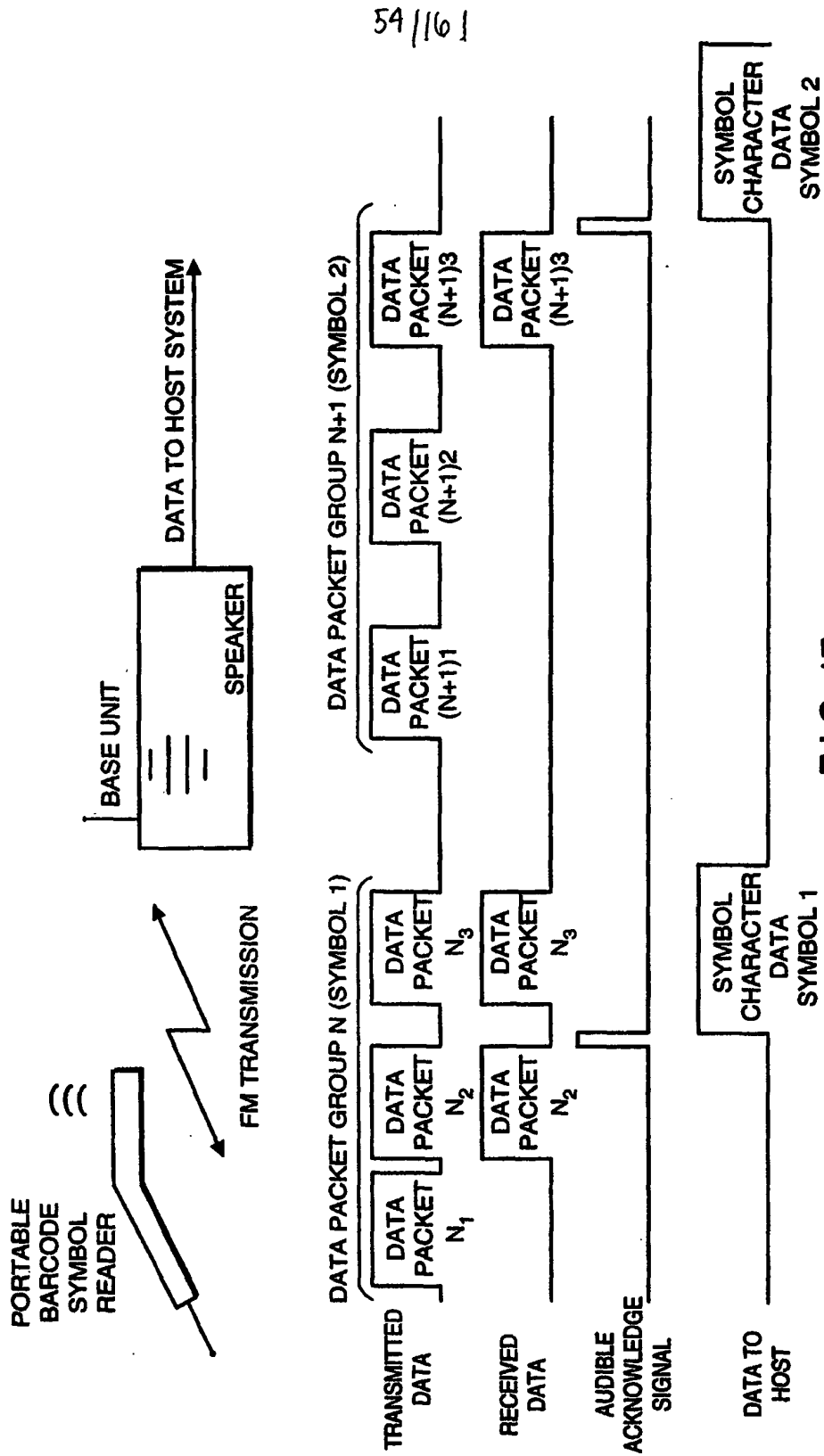


FIG. 17



FIG. 18

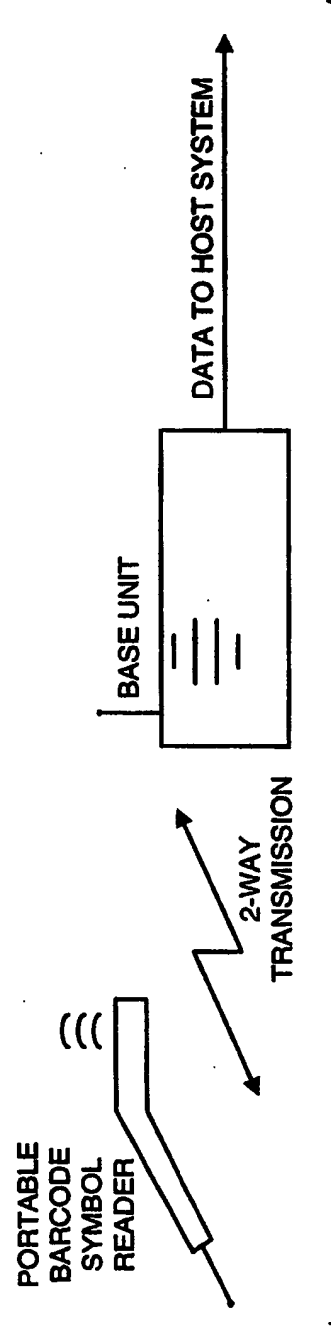


FIG. 19

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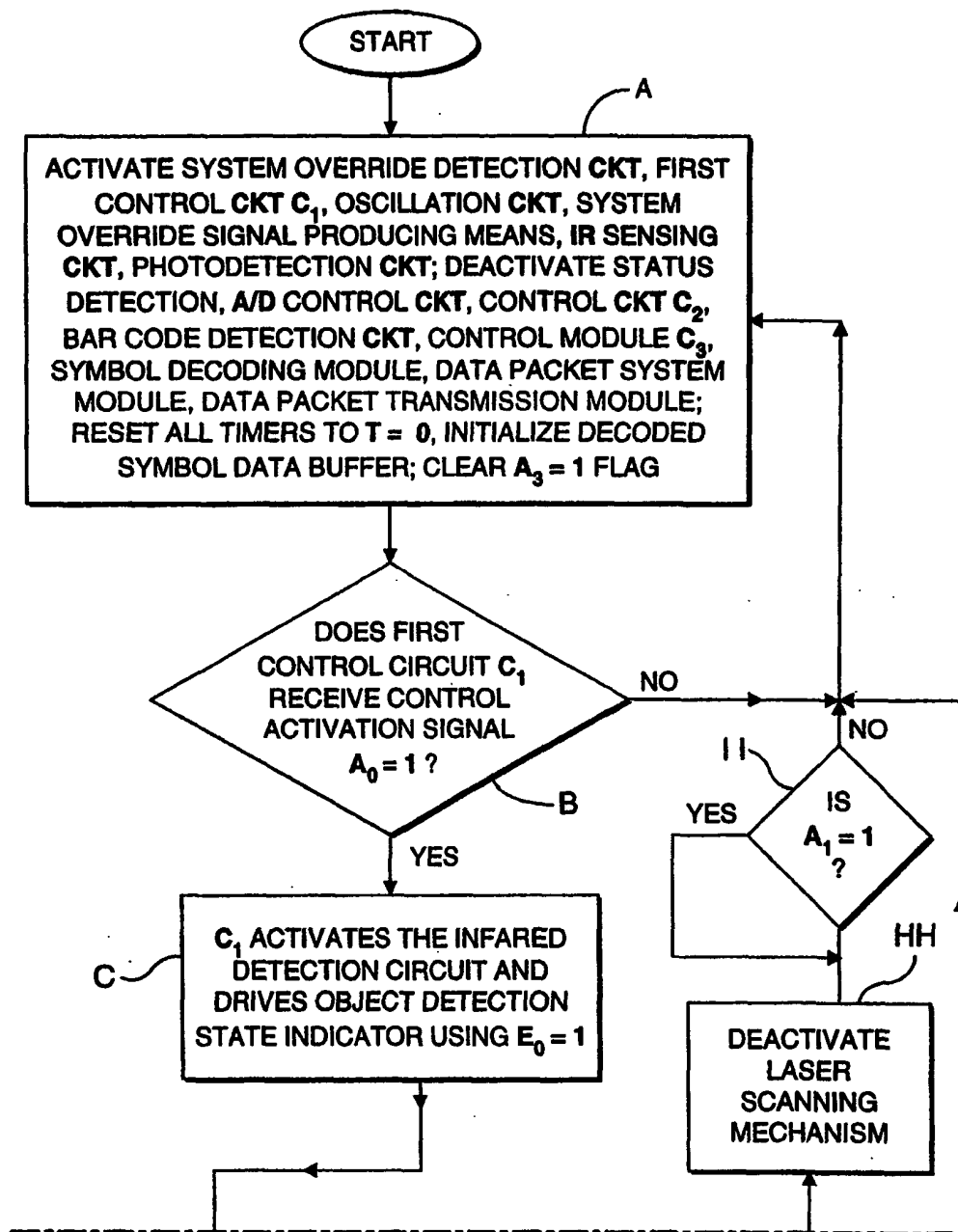


FIG. 20A1

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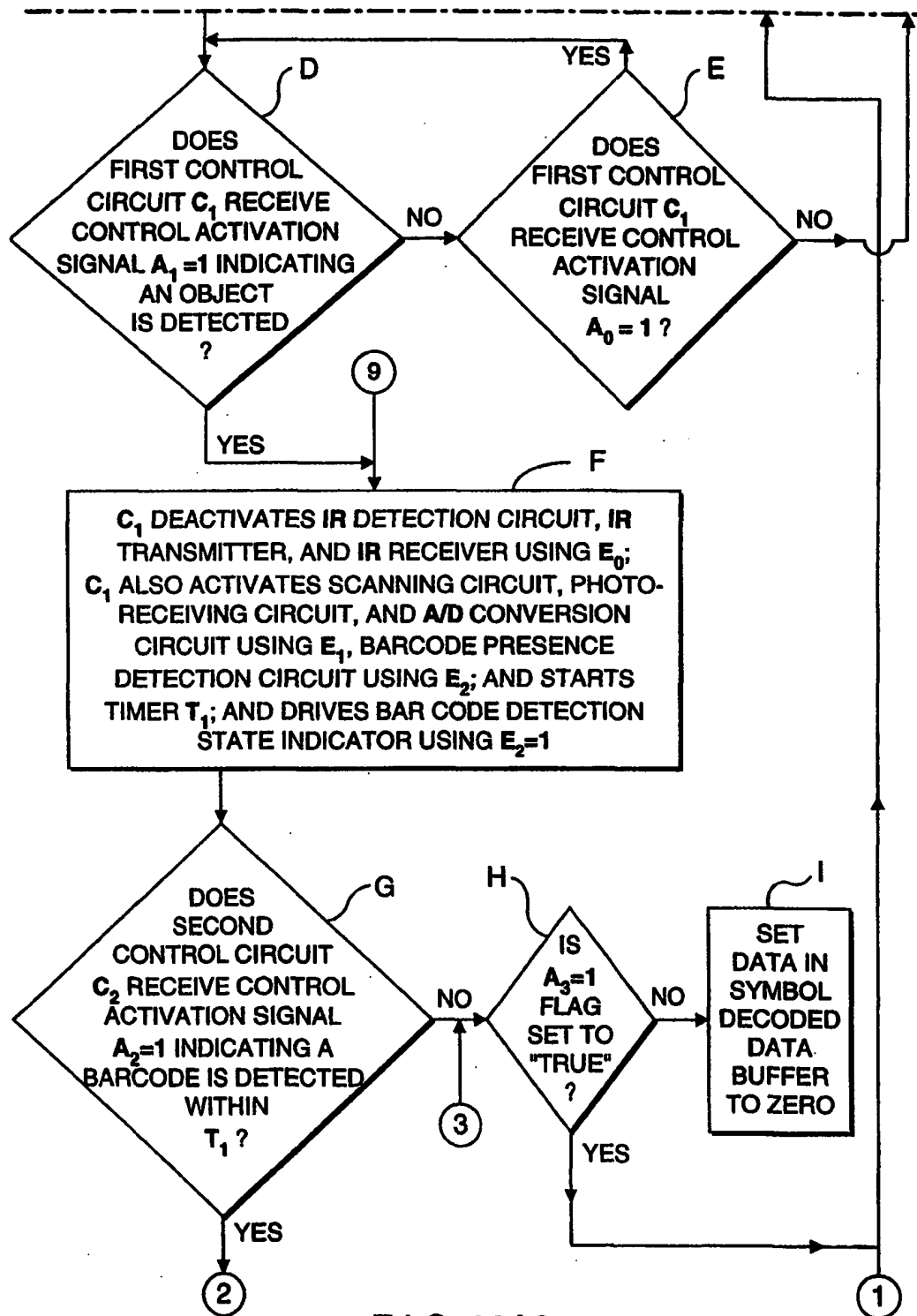


FIG. 20A2

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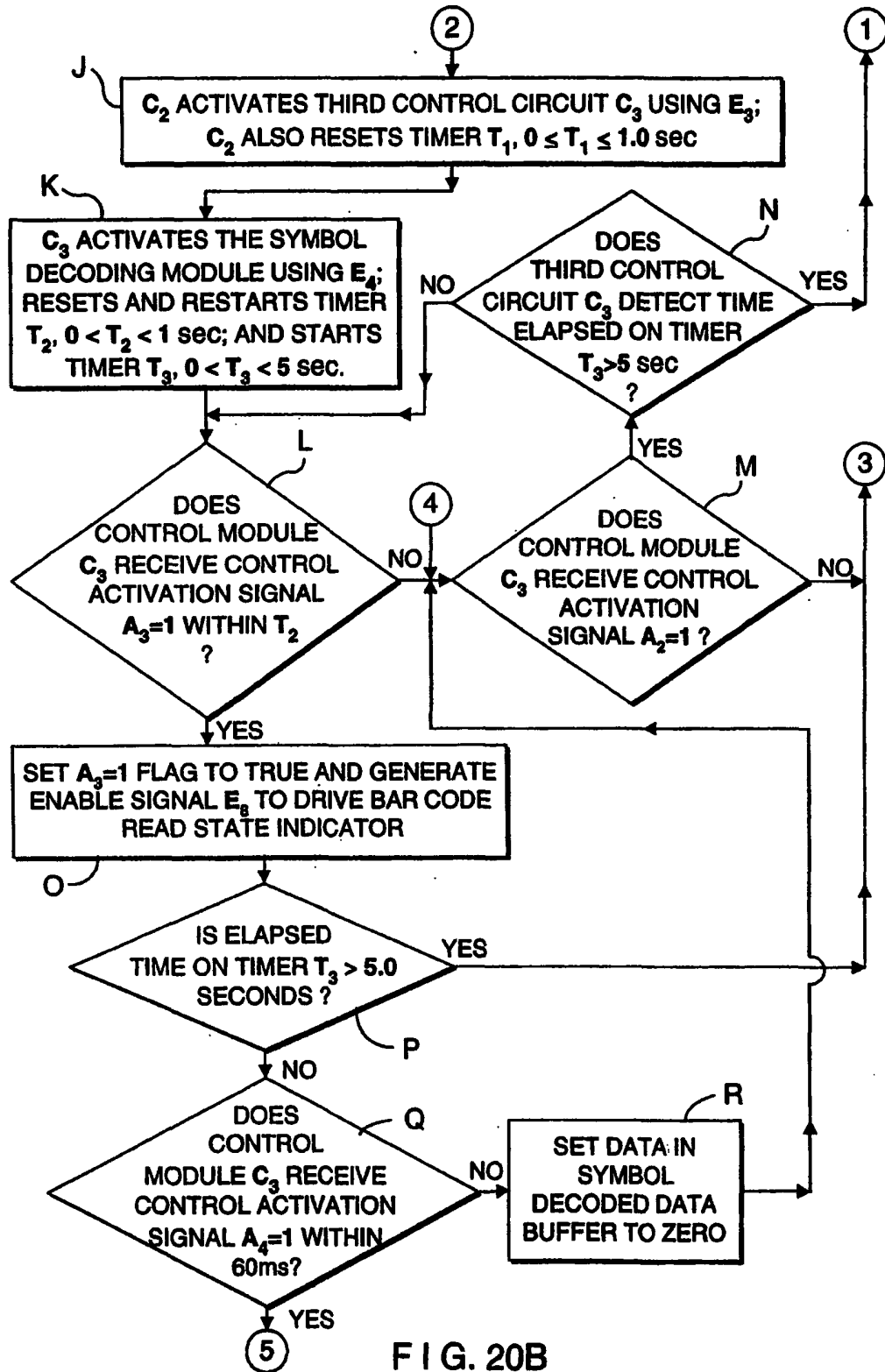


FIG. 20B

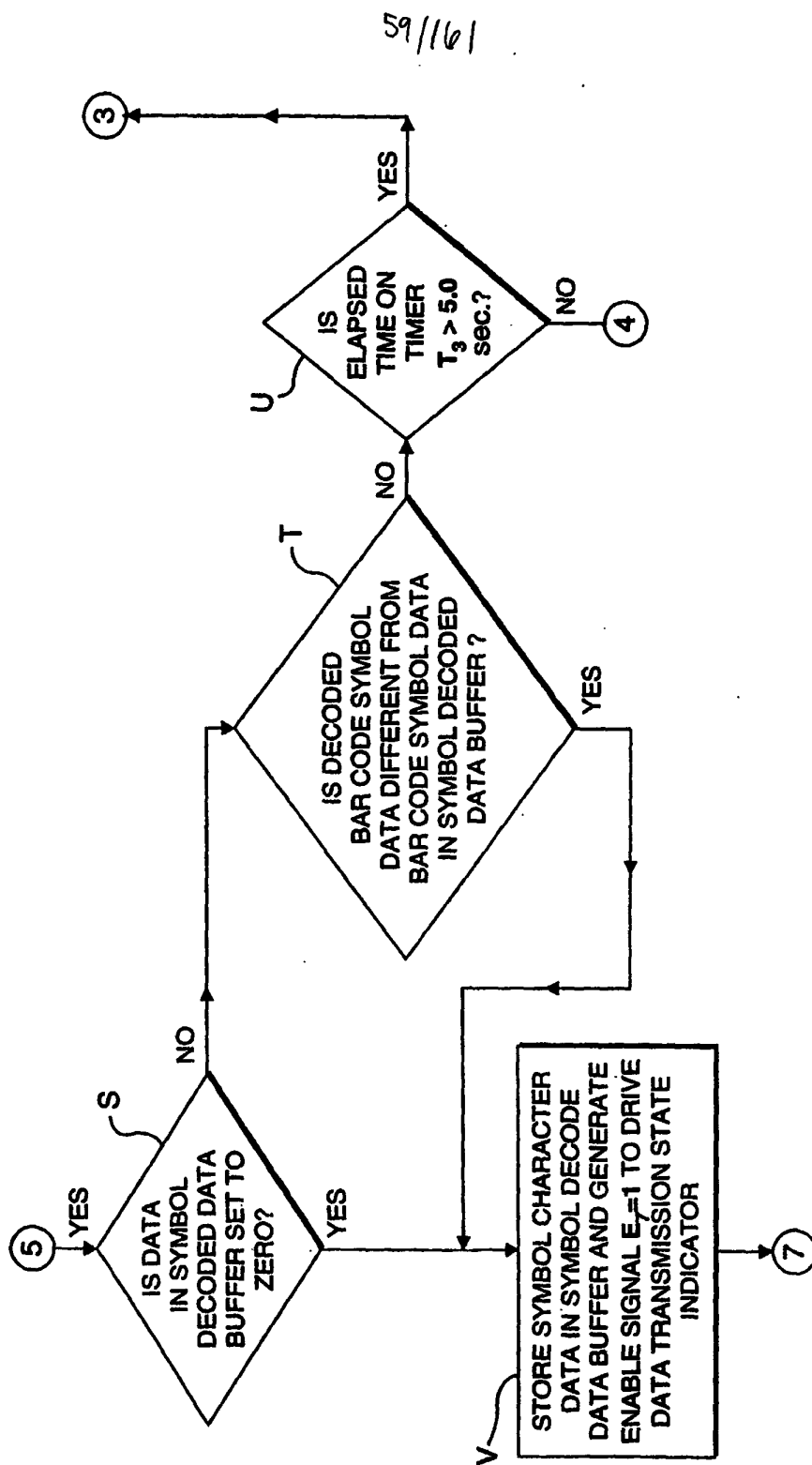


FIG. 20C

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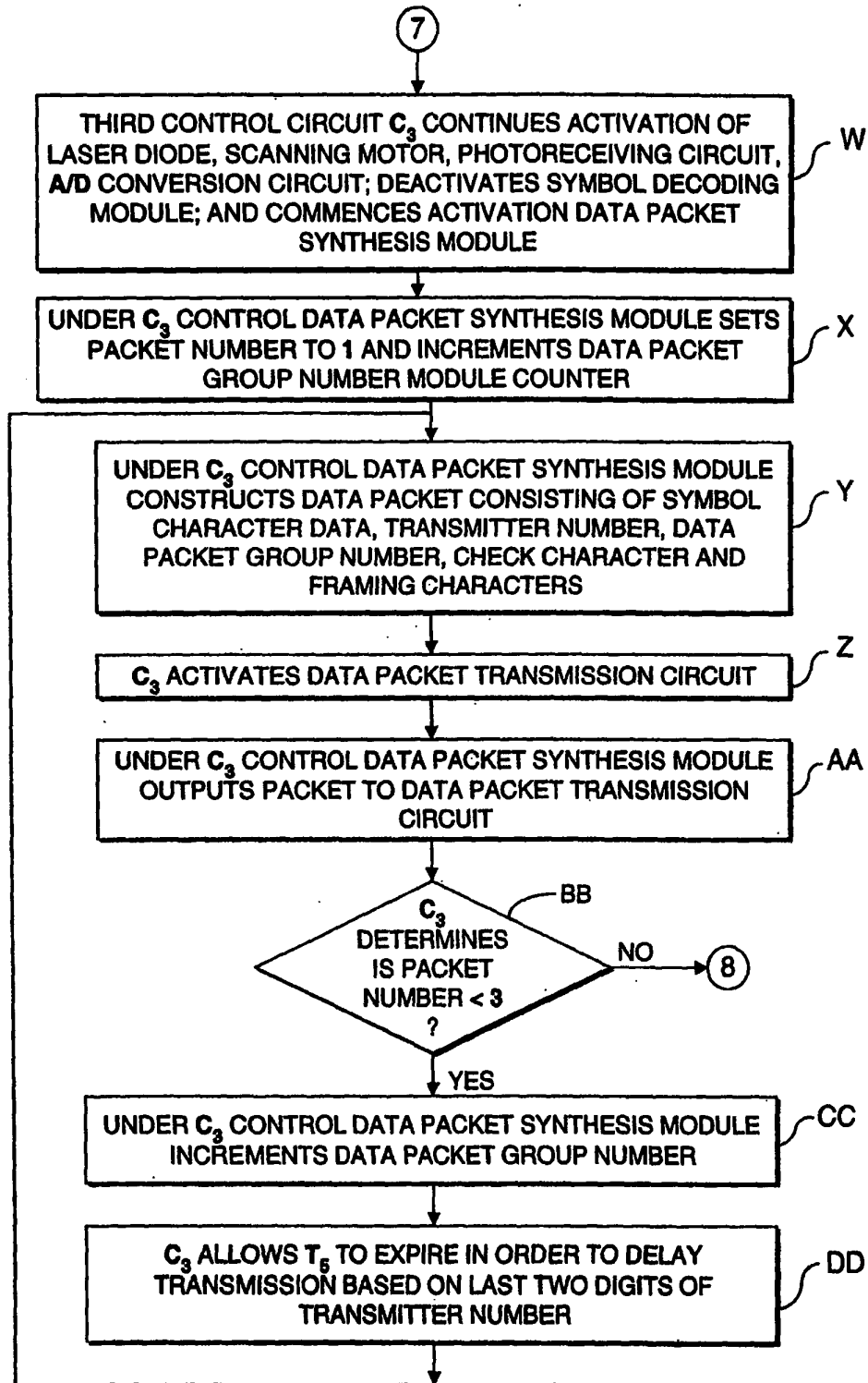


FIG. 20D

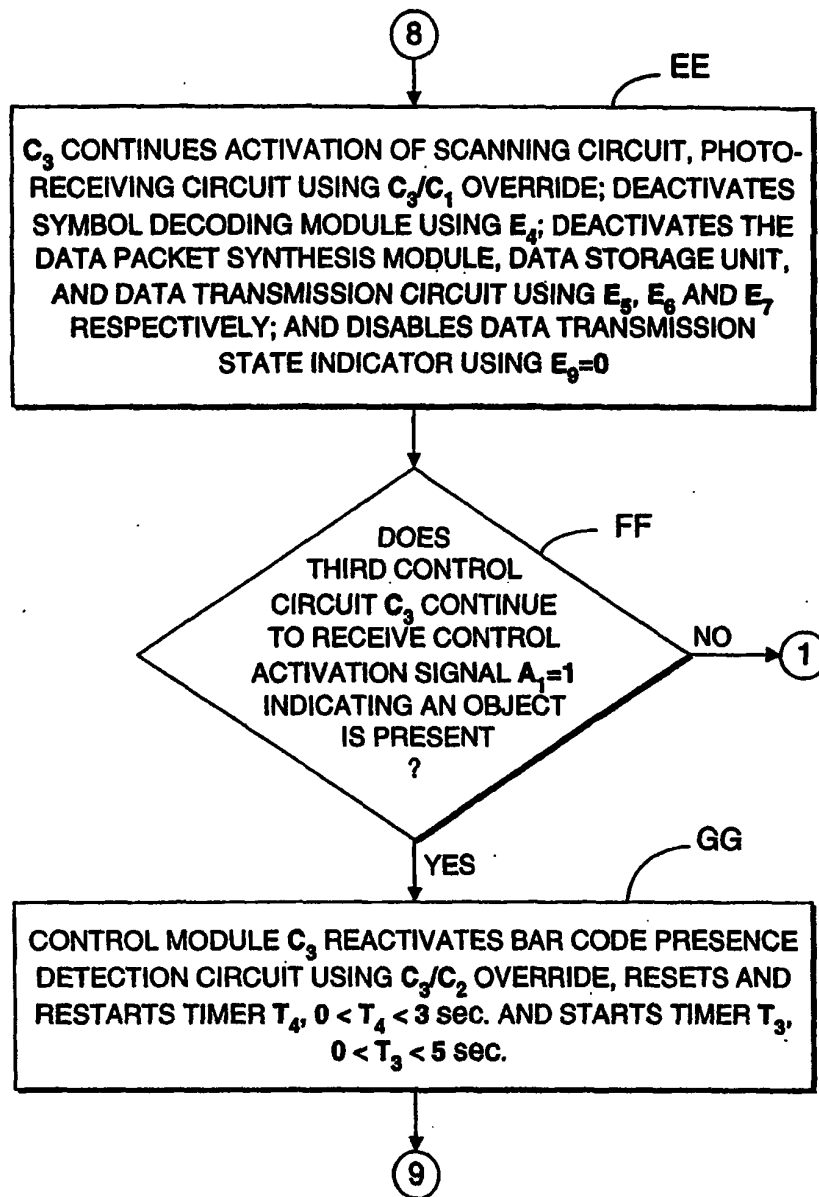


FIG. 20E

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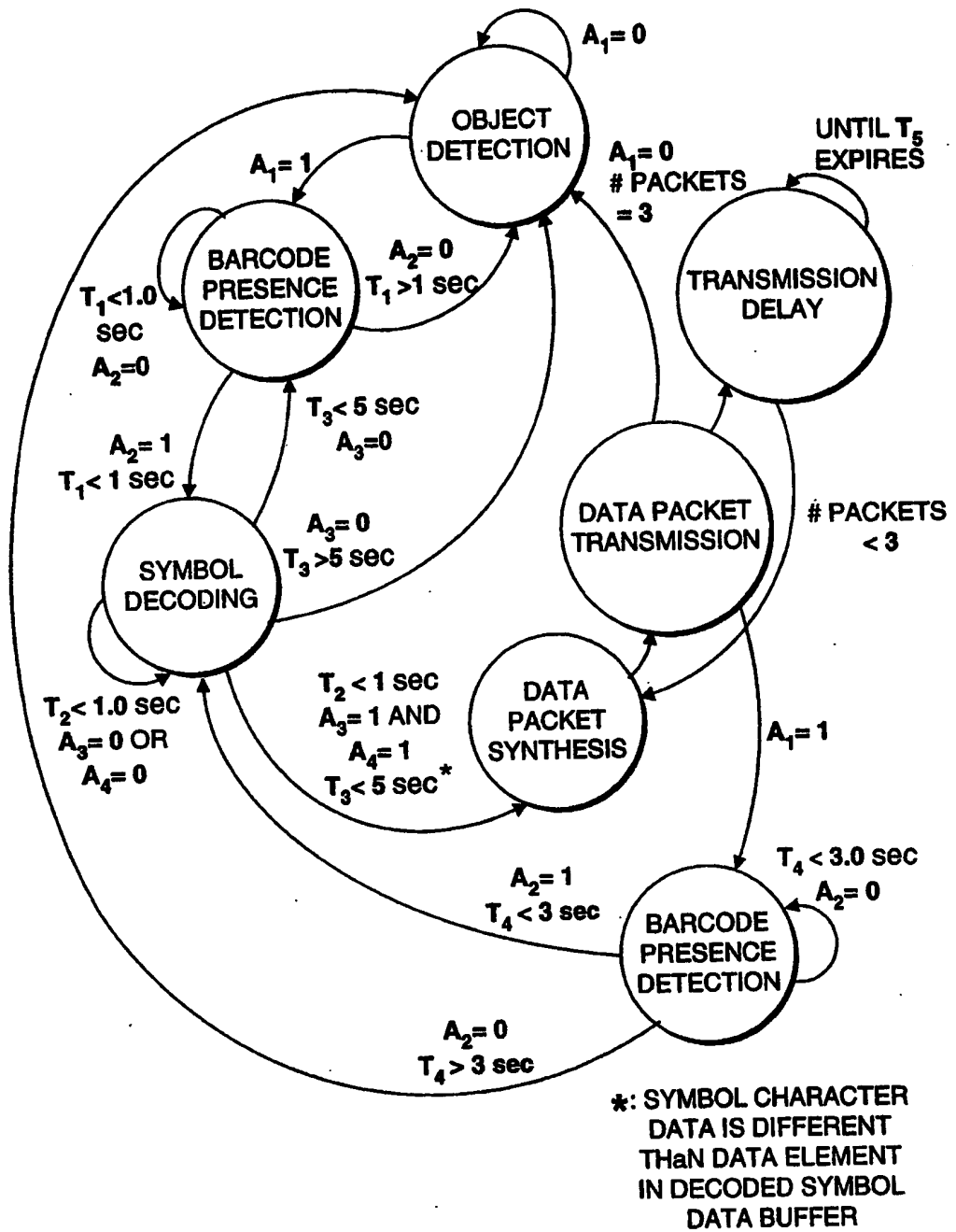


FIG. 21

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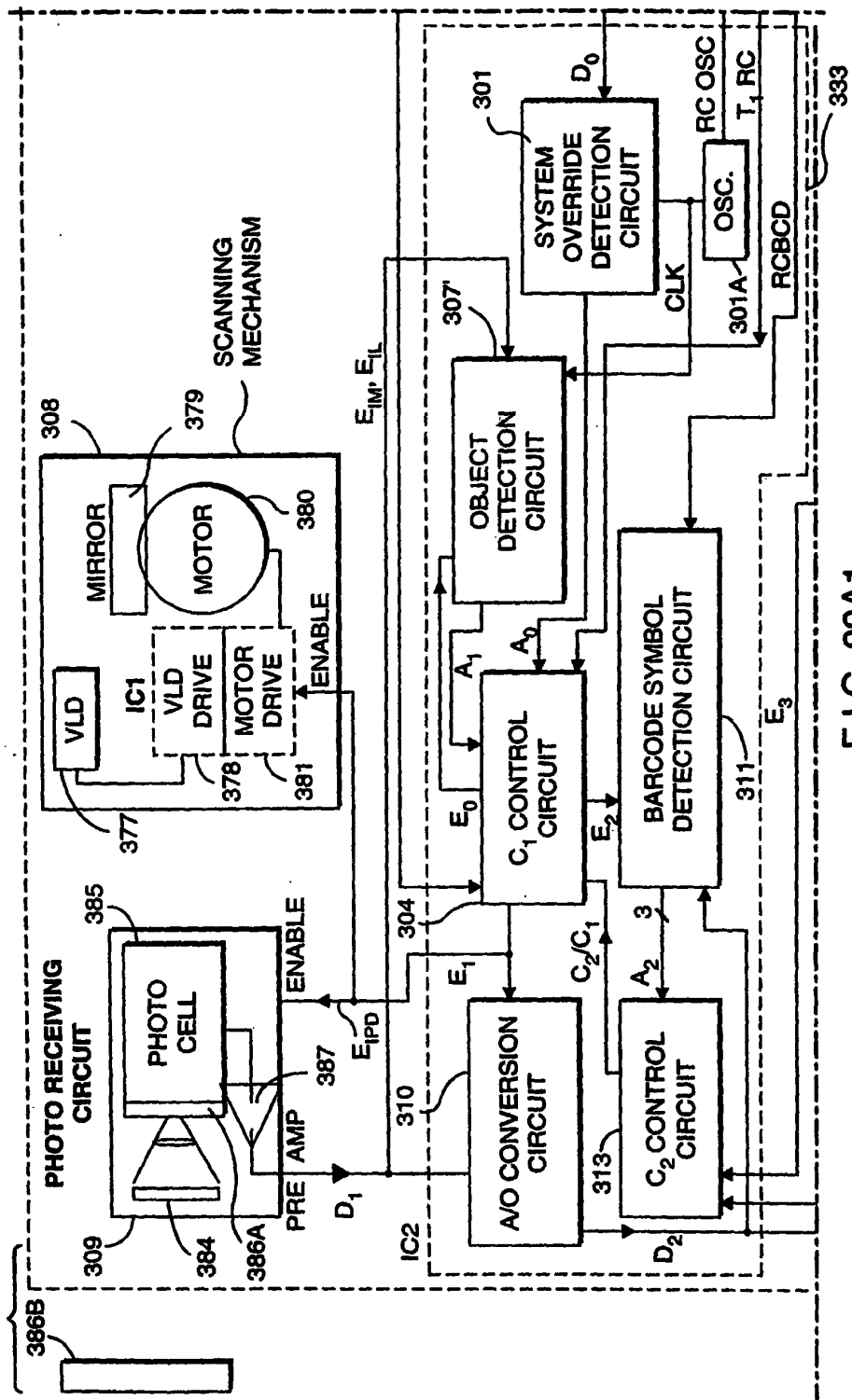
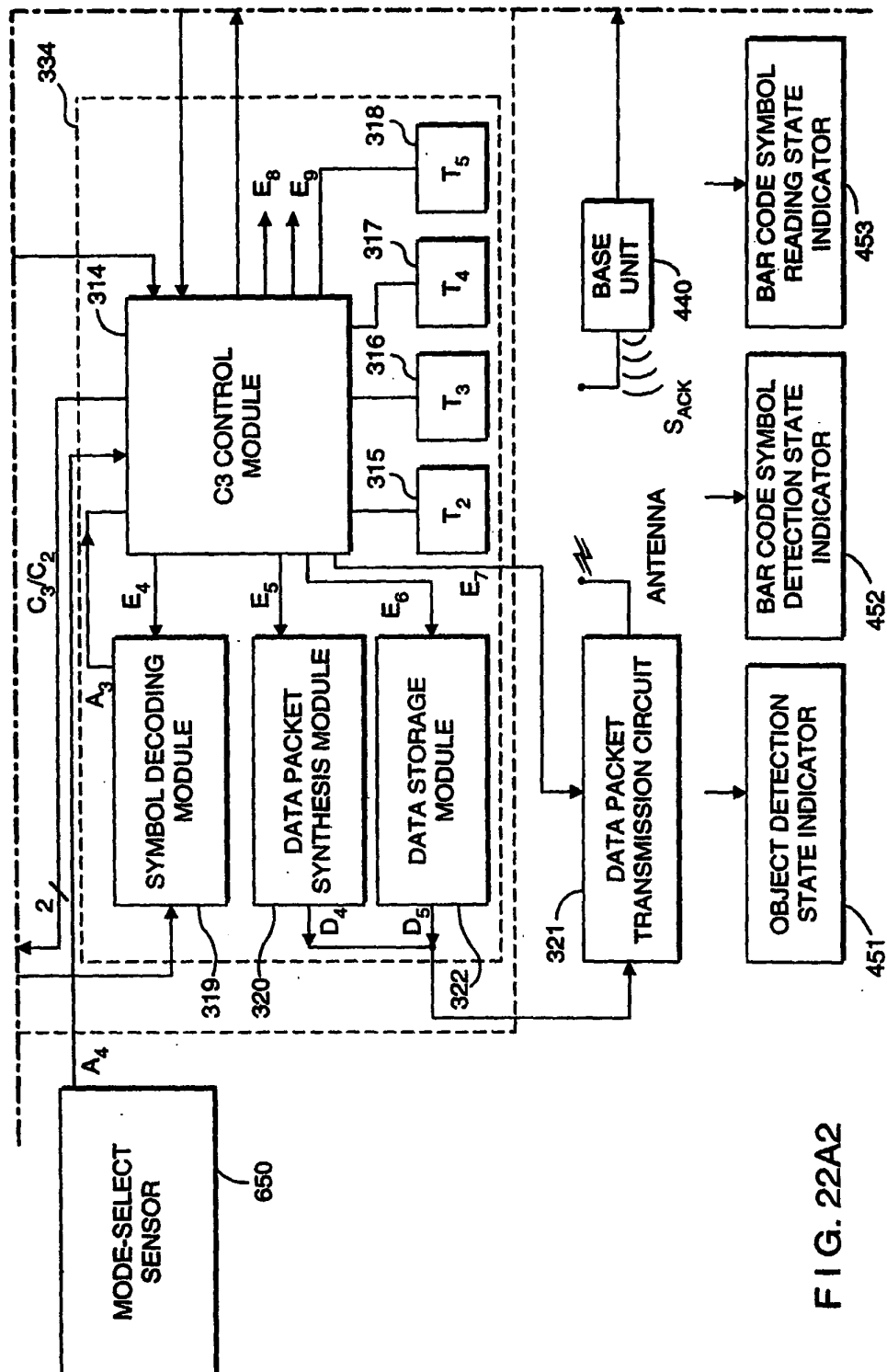


FIG. 22A1



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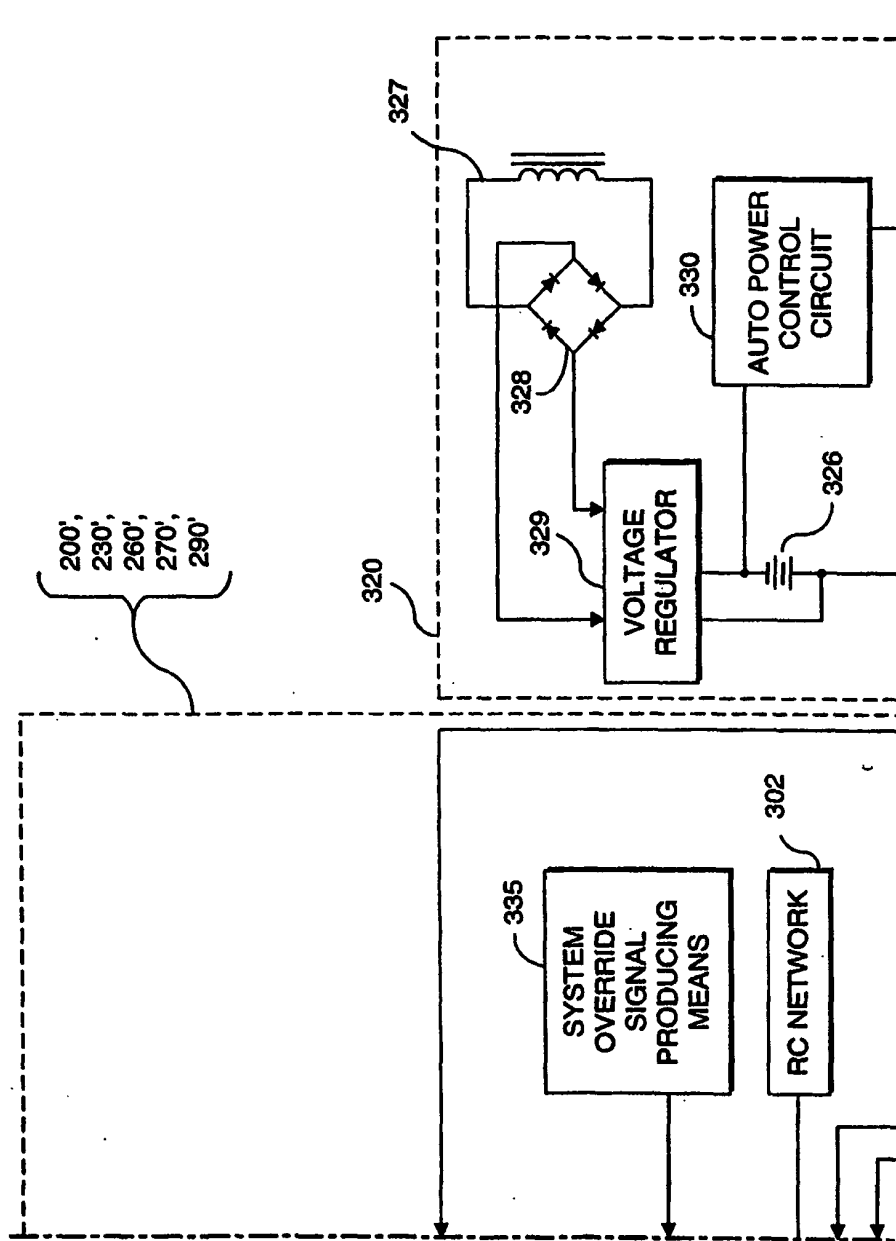


FIG. 22A3

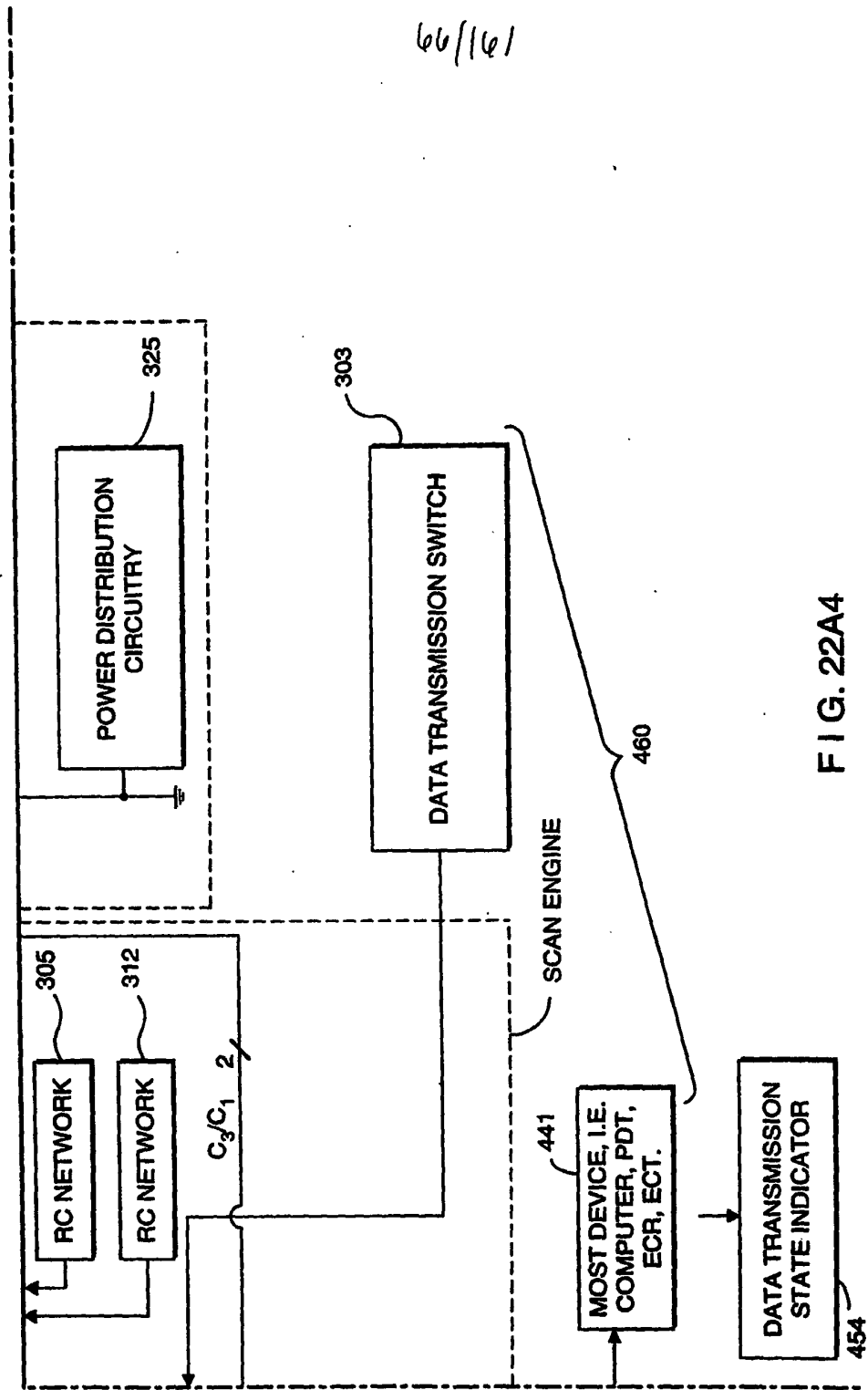


FIG. 22A4

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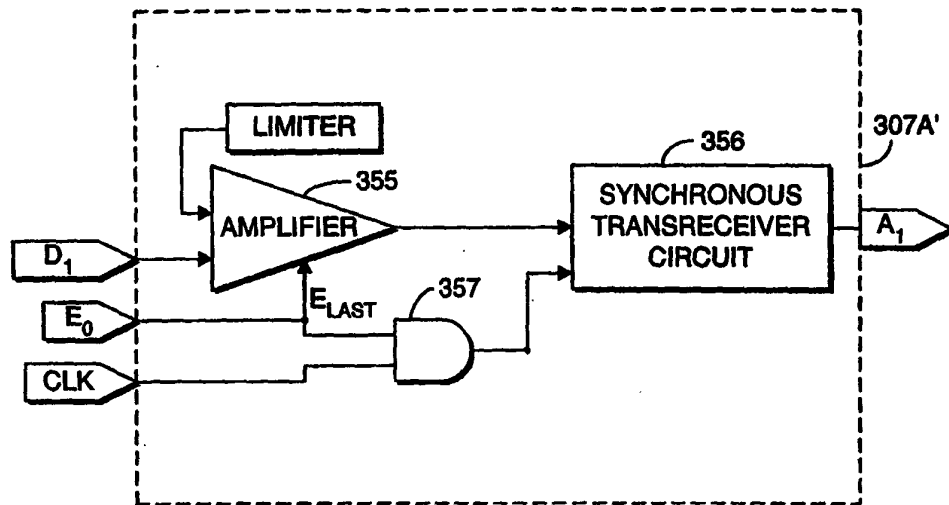


FIG. 22B

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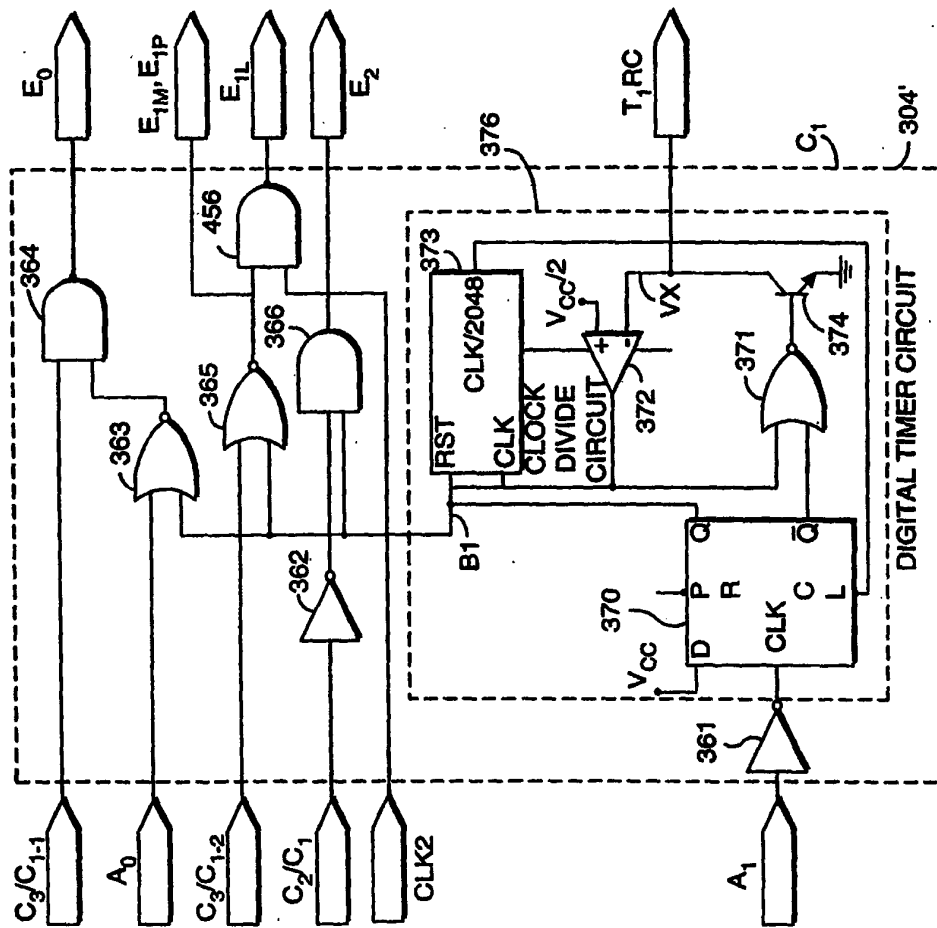


FIG. 22C

C_1

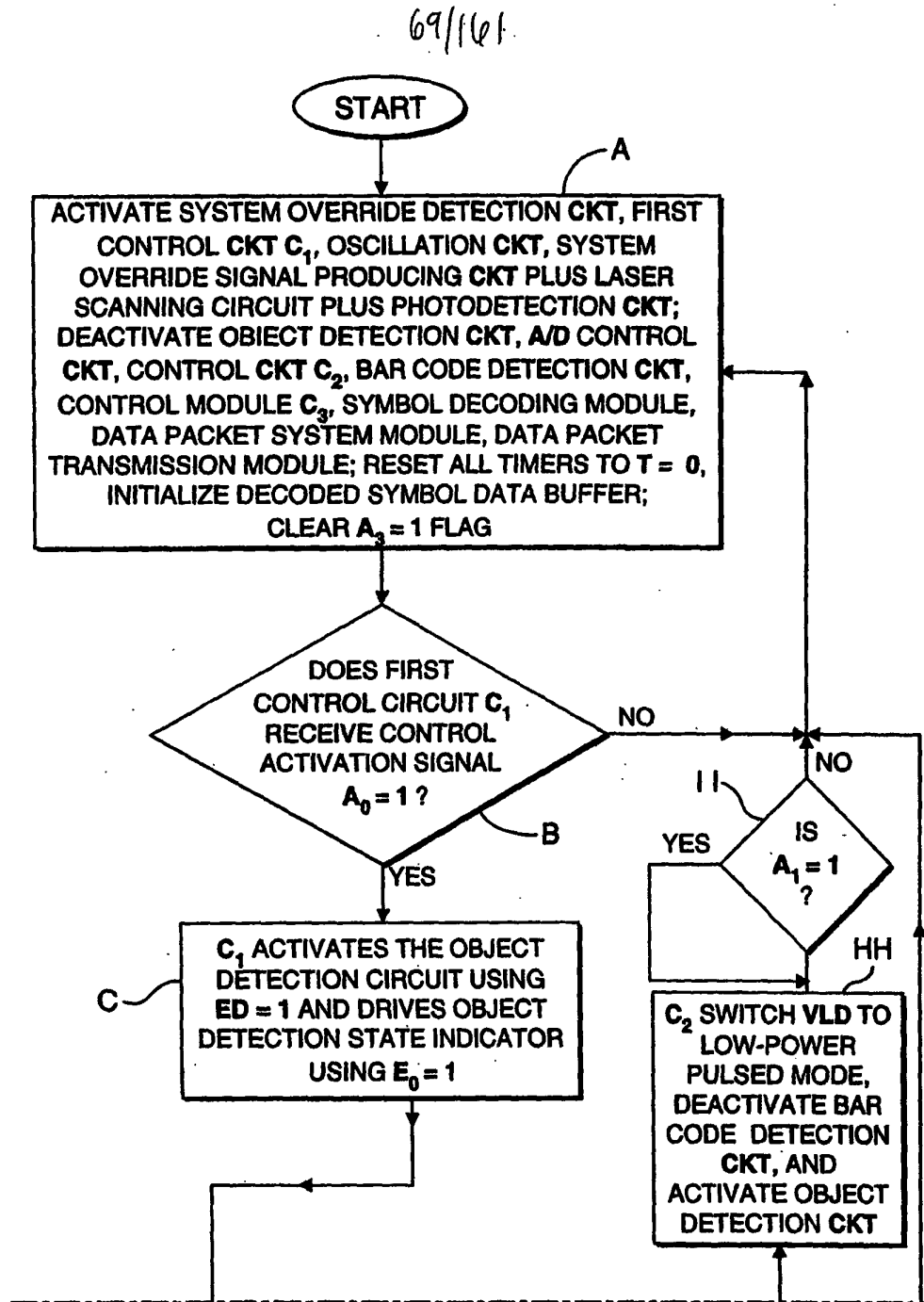


FIG. 23A1

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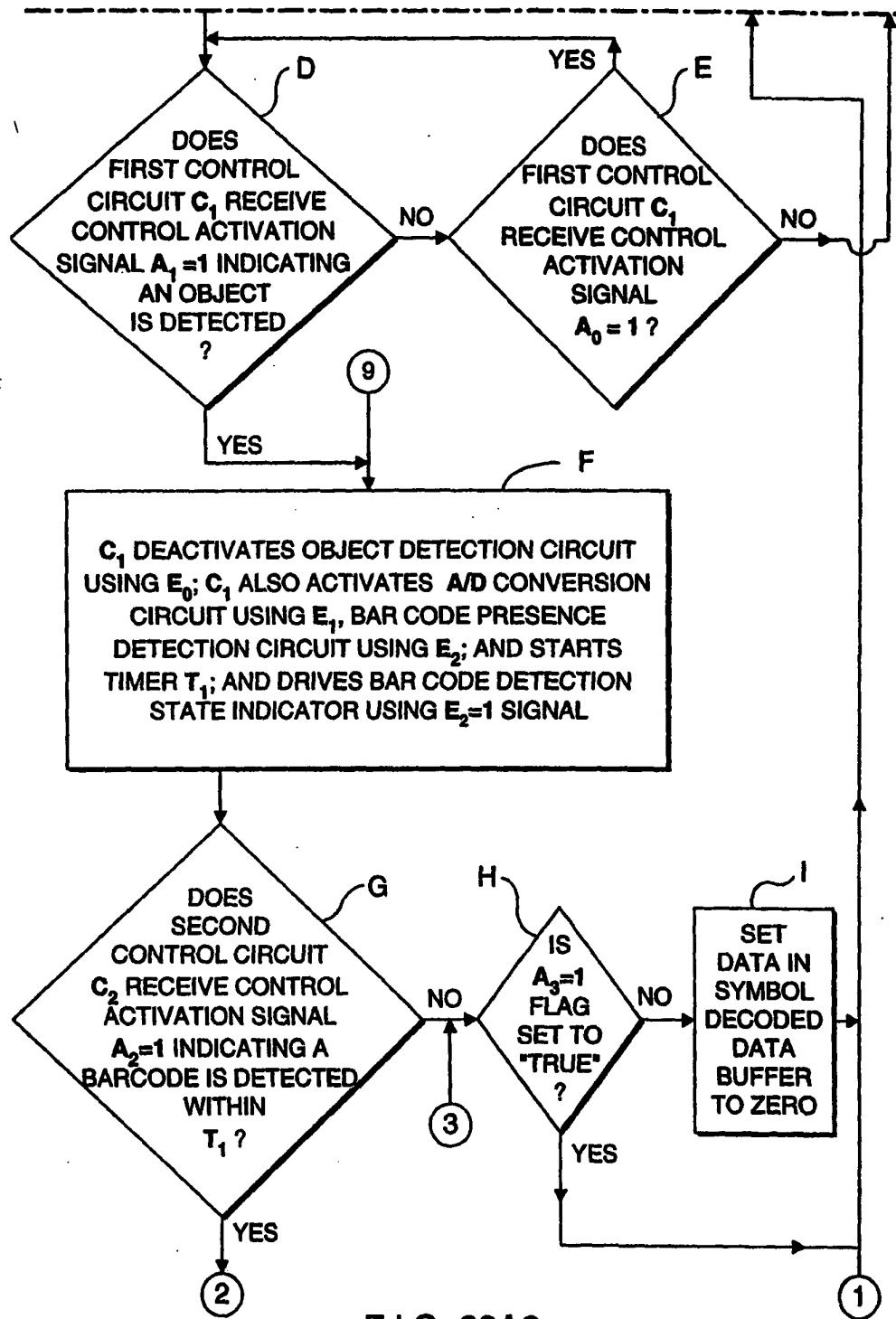
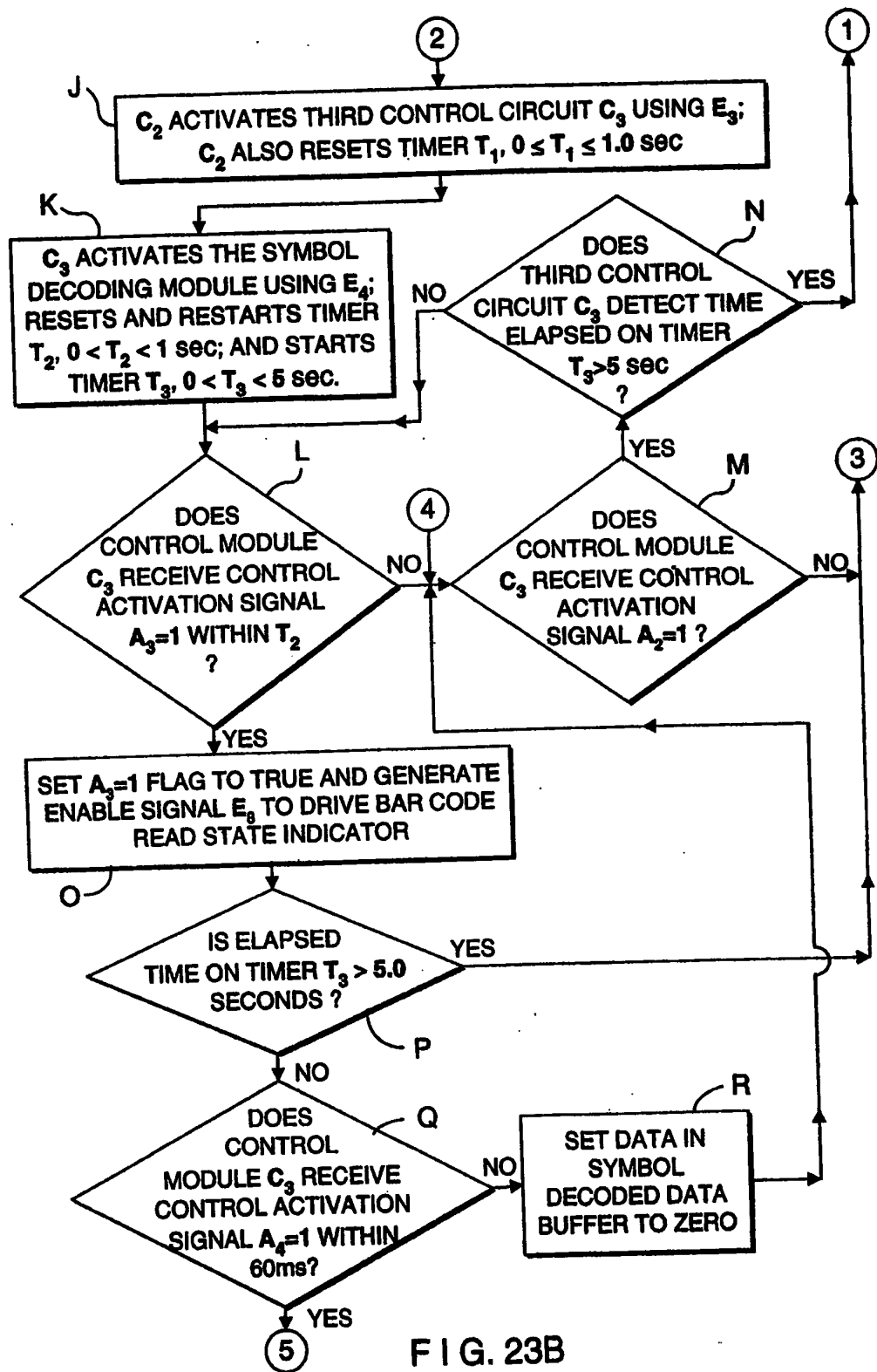


FIG. 23A2



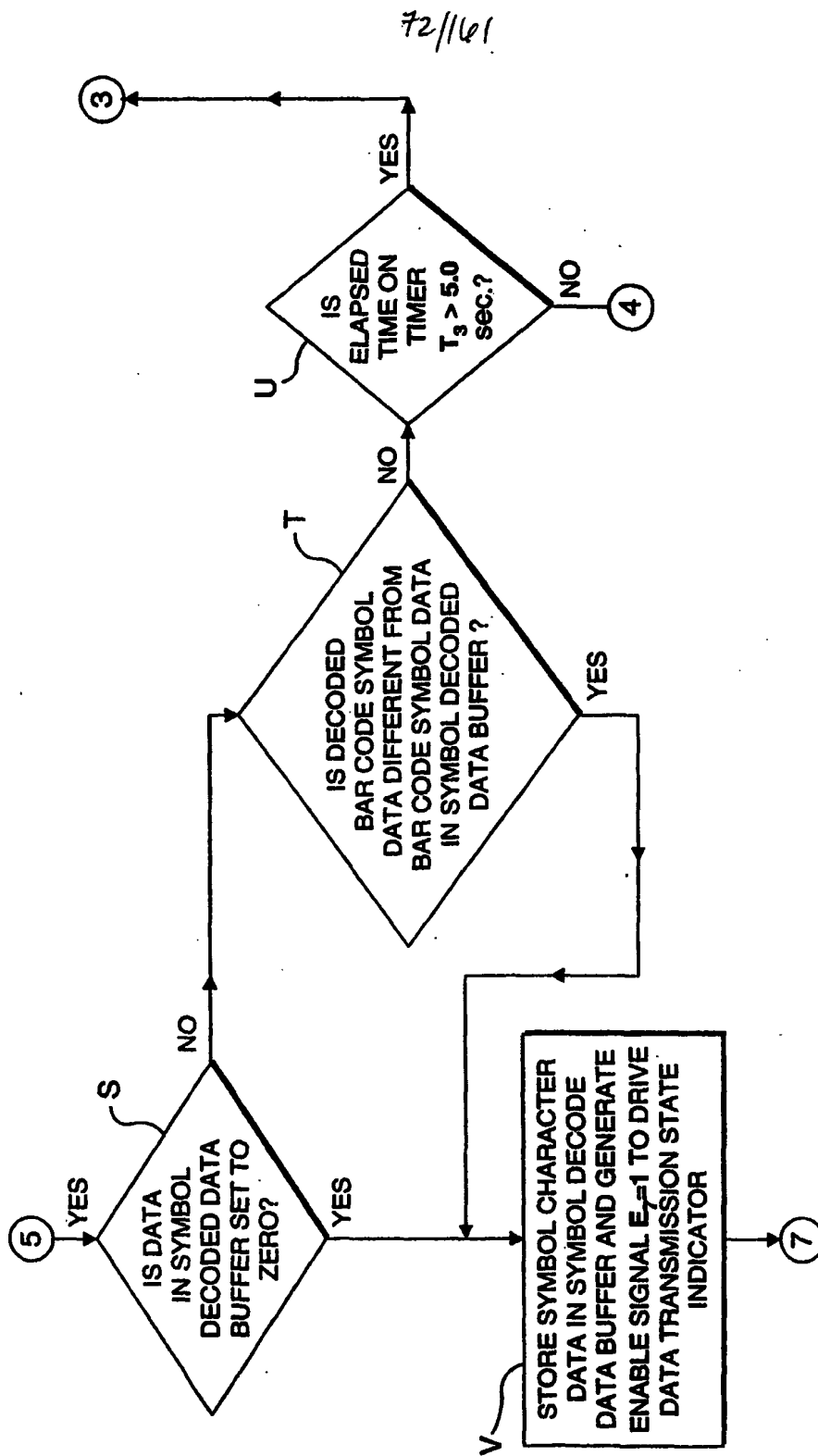


FIG. 23C

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7

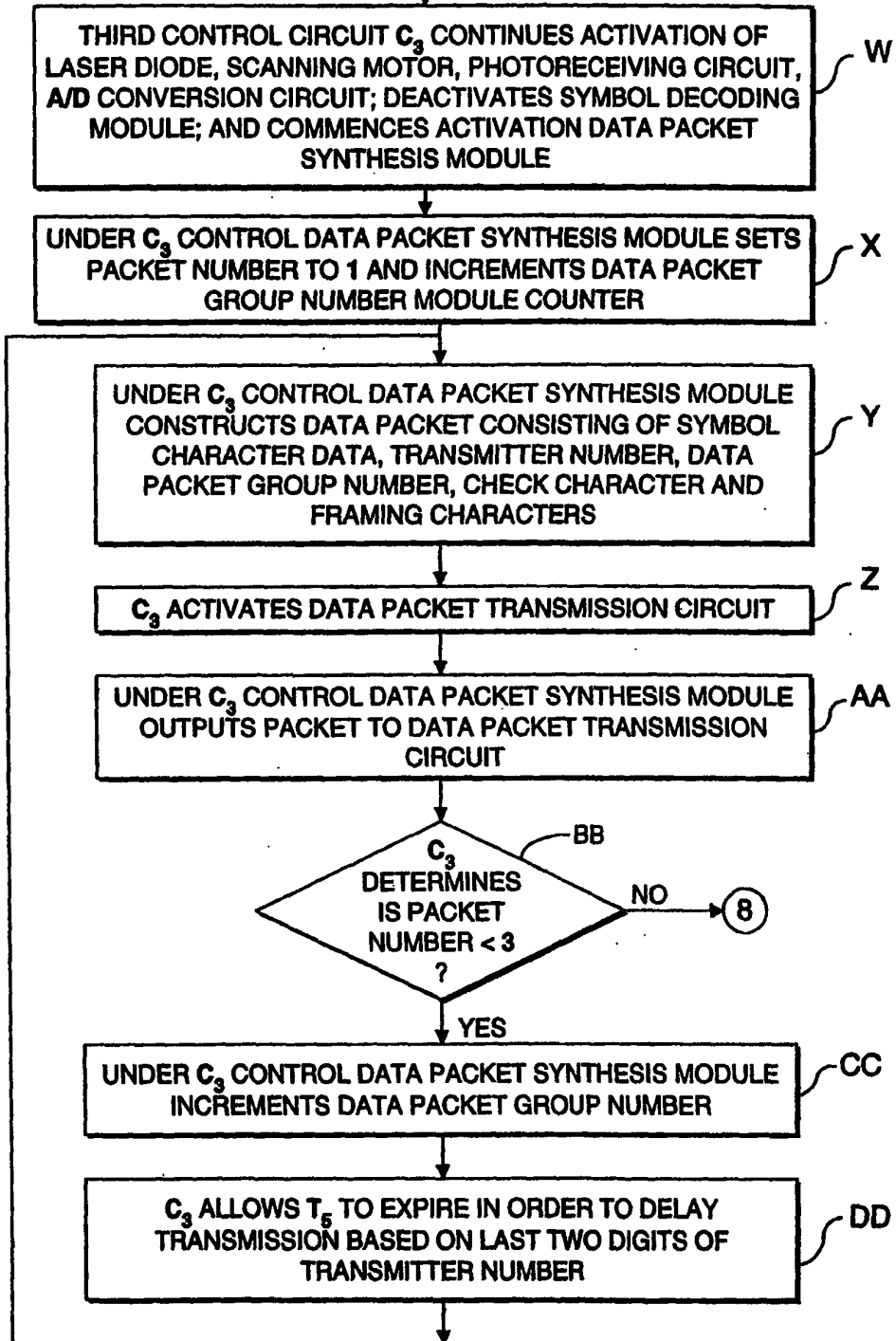


FIG. 23D

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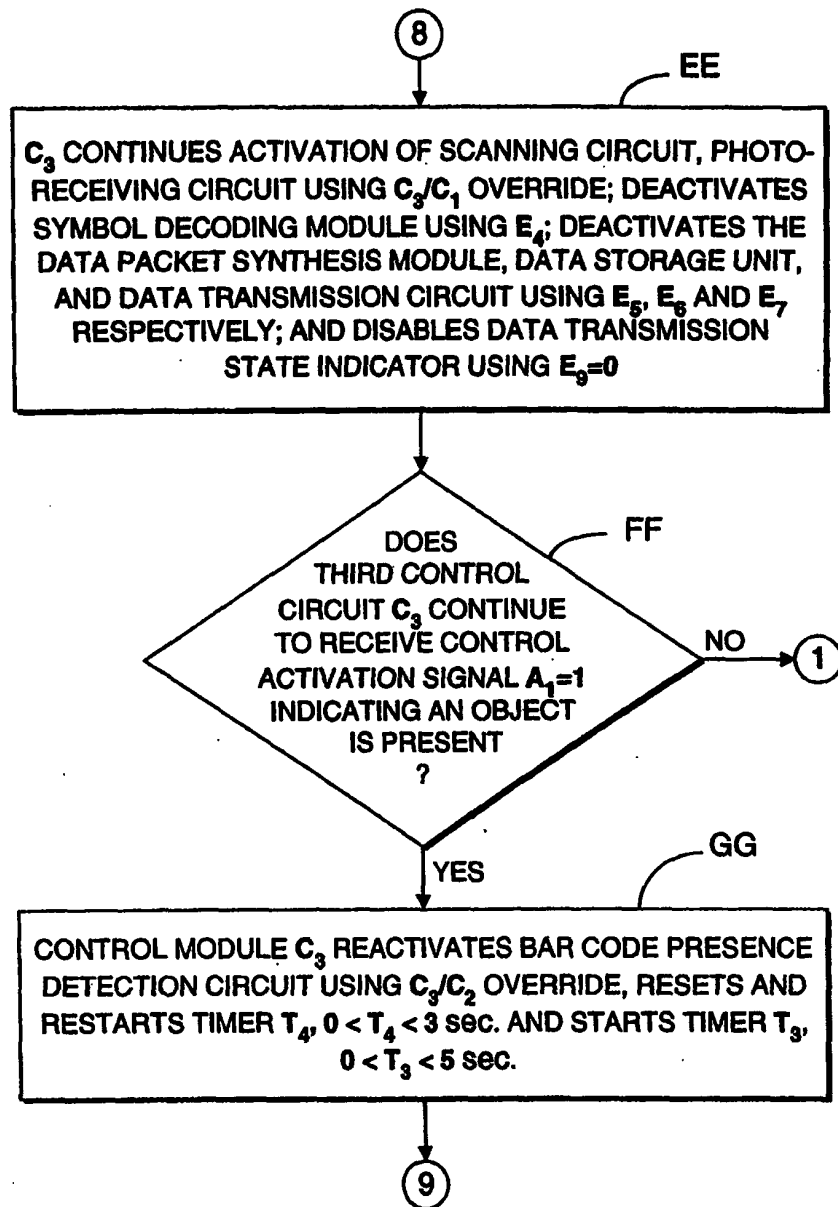


FIG. 23E

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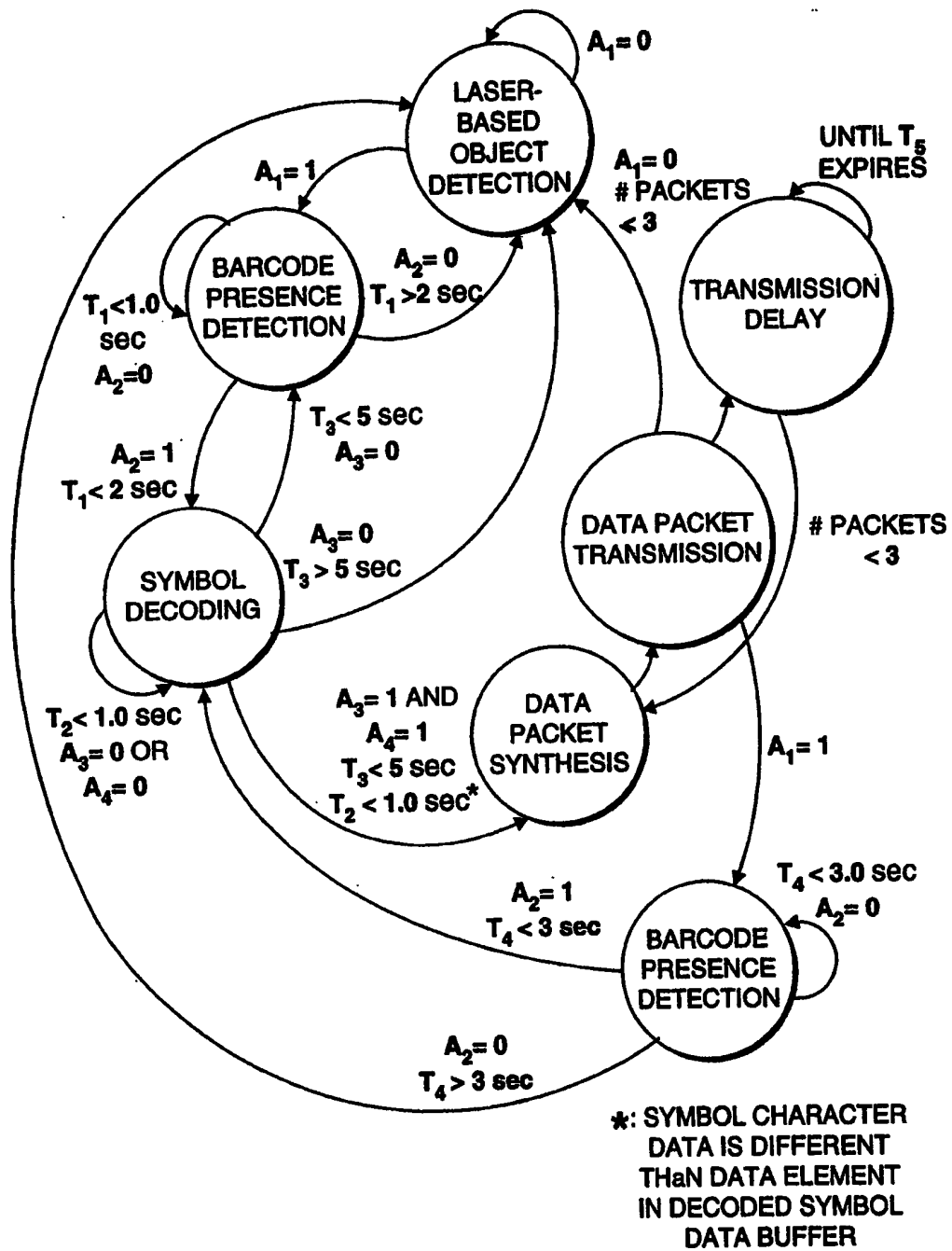


FIG. 24

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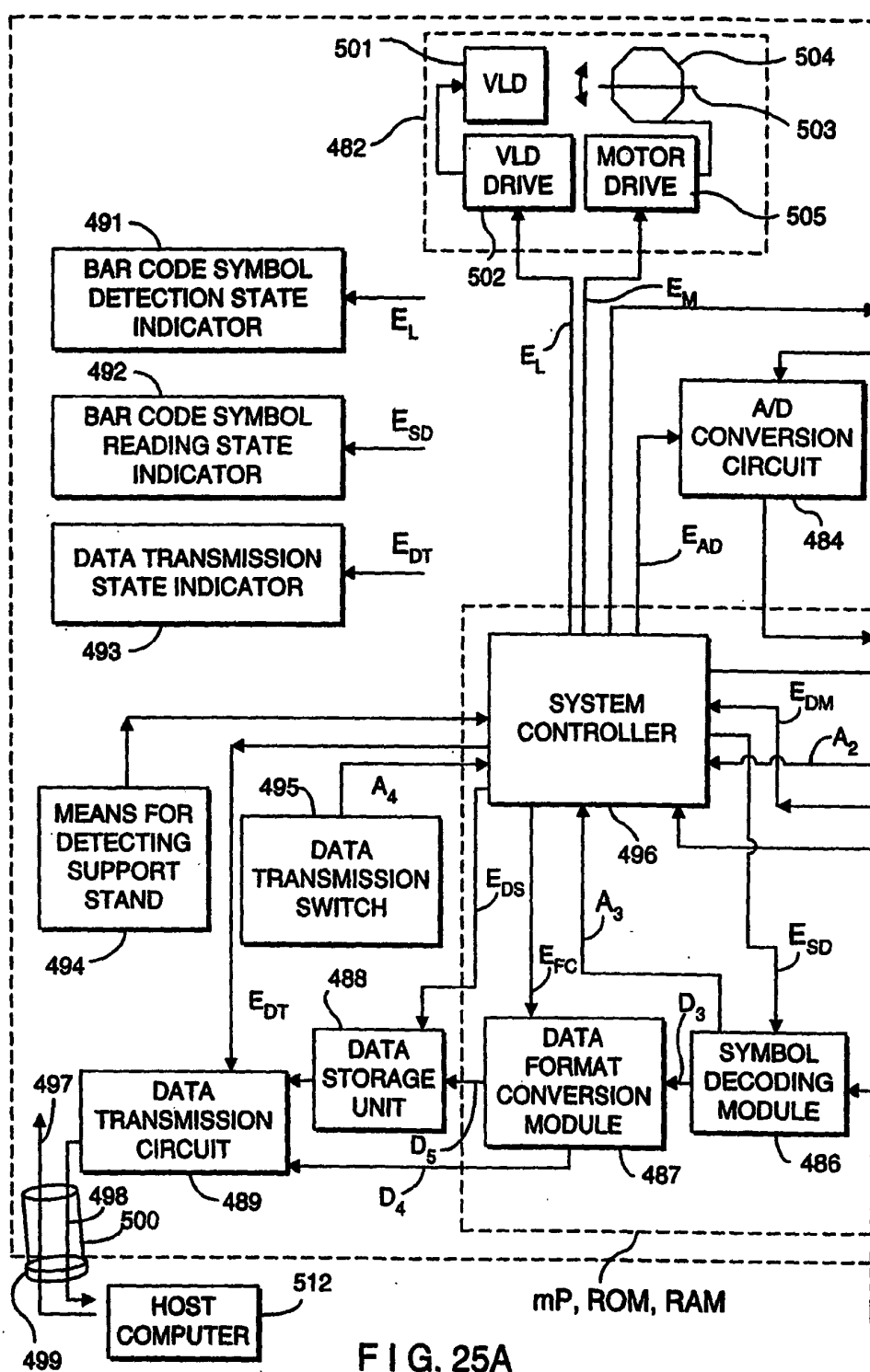


FIG. 25A

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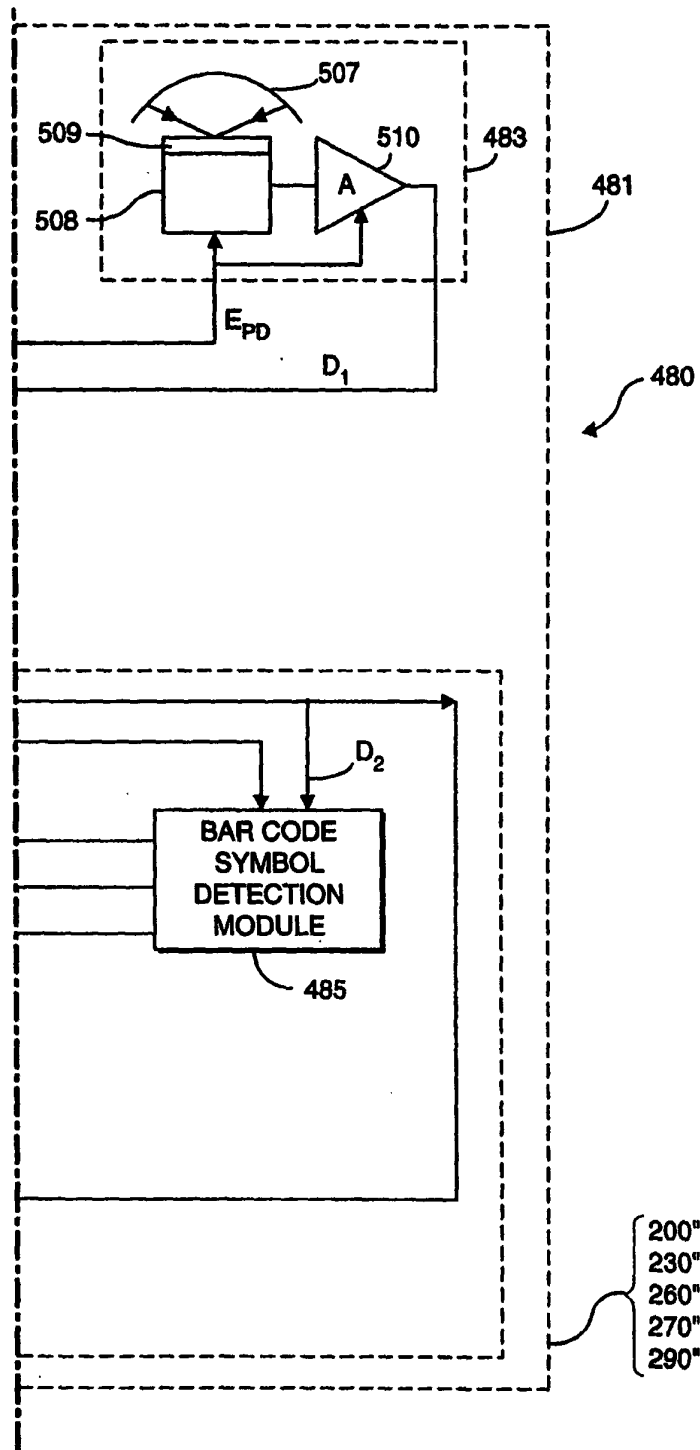


FIG. 25B

Timing diagram for a laser beam. The vertical axis is labeled "LASER BEAM INTENSITY" and has a mark for I_{MAX} . The horizontal axis is labeled "SECONDS" and has a mark for 0. The diagram shows a series of rectangular pulses of intensity I_{MAX} separated by intervals of time T . The duration of each pulse is T_1 . The text "LASER OFF" is written below the horizontal axis during the intervals T . Ellipses (...) indicate that the sequence of pulses continues. Above the diagram, the text $T_1 = 1/2 \text{ sec.}, T_{LASER OFF} = 1/2 \text{ sec.}$ is written.

FIG. 26

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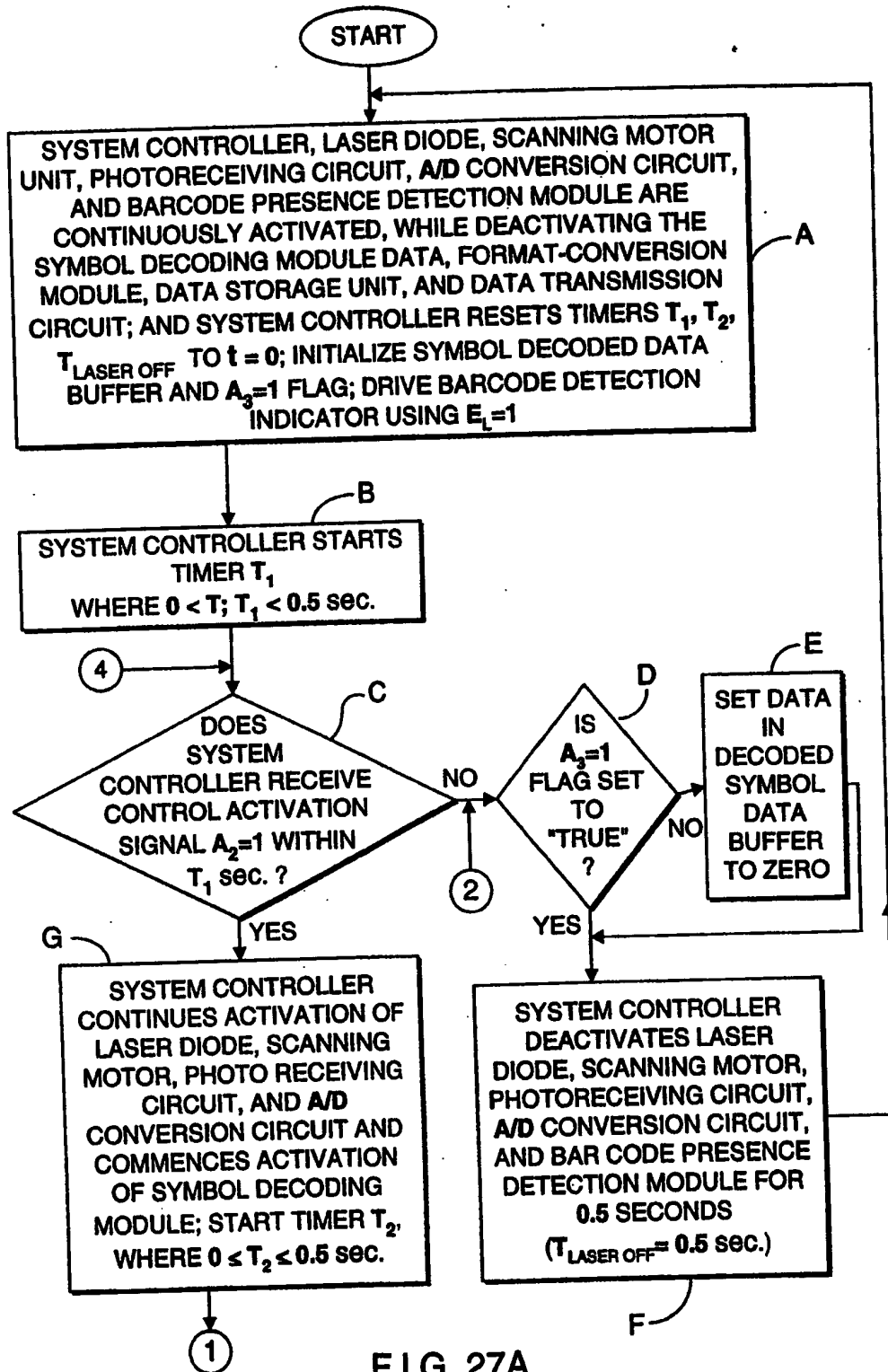


FIG. 27A

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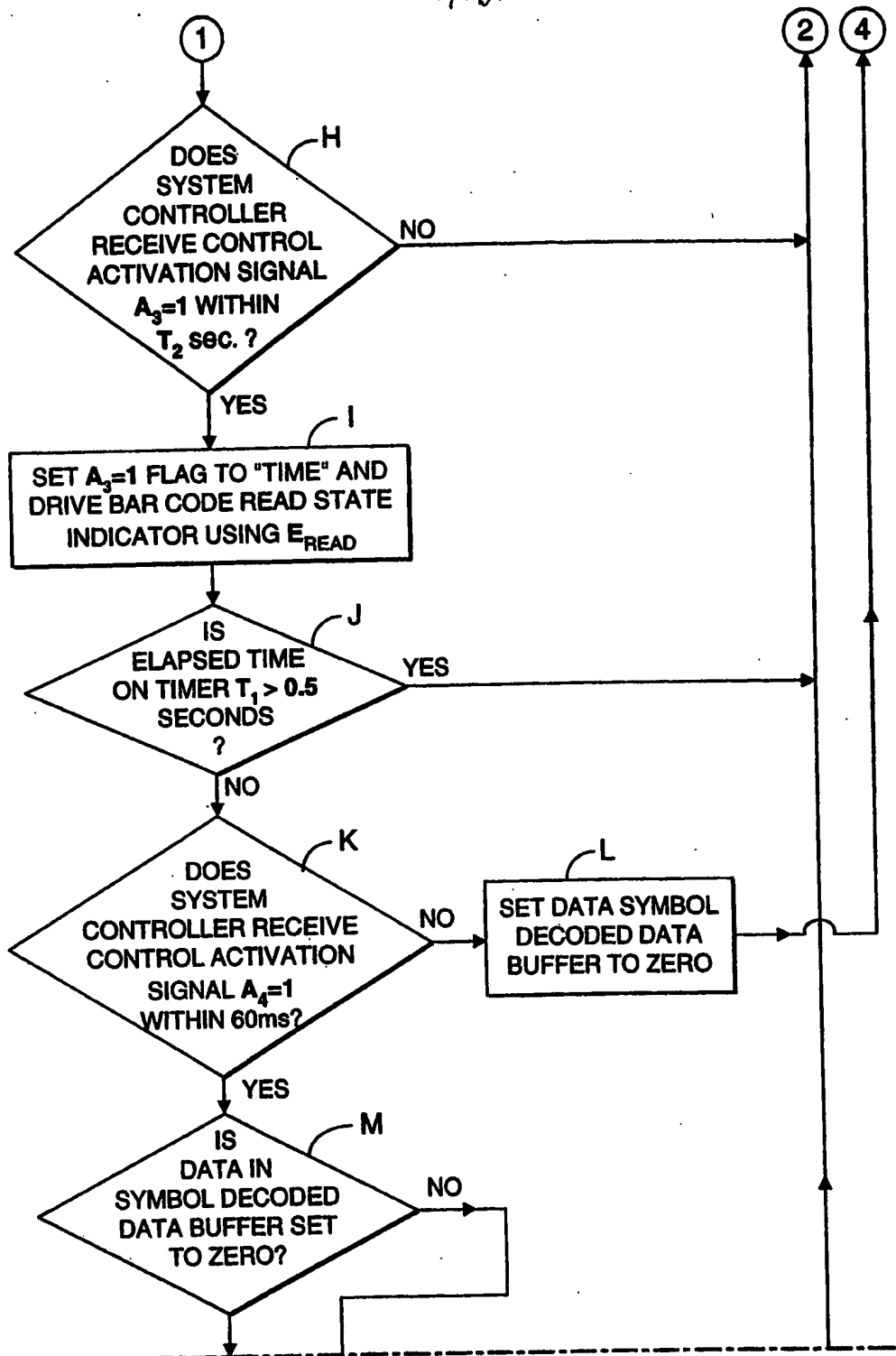


FIG. 27B1

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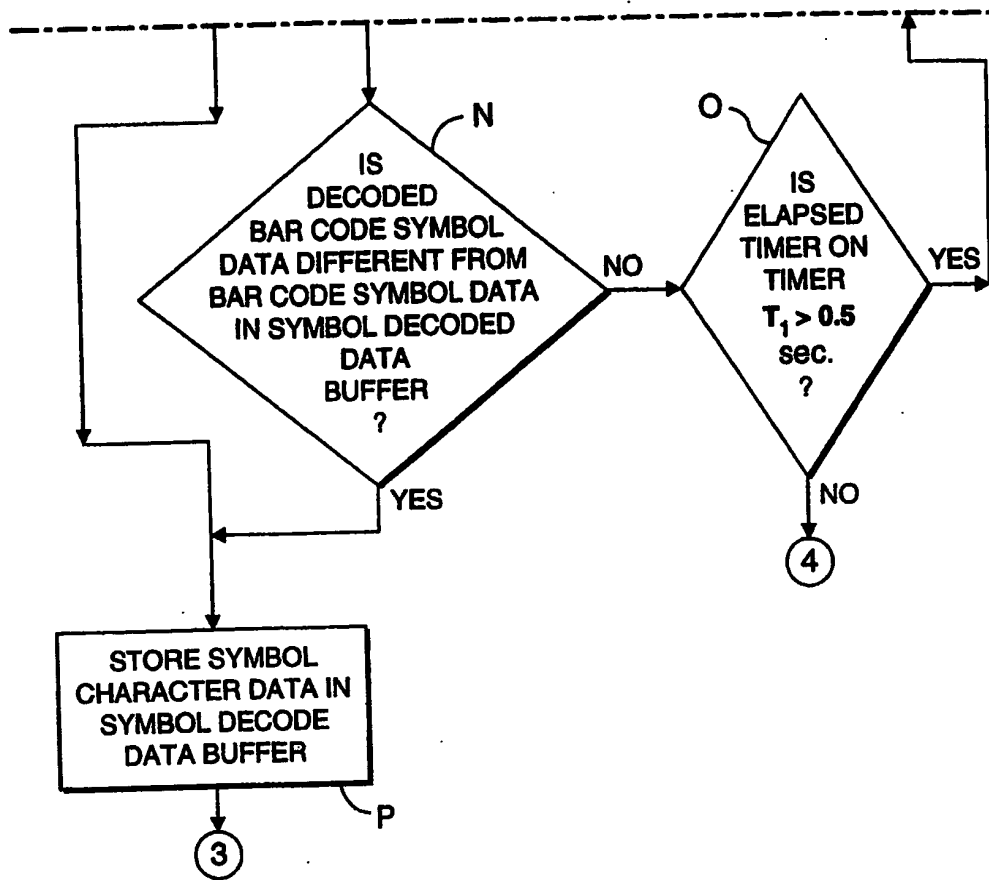


FIG. 27B2

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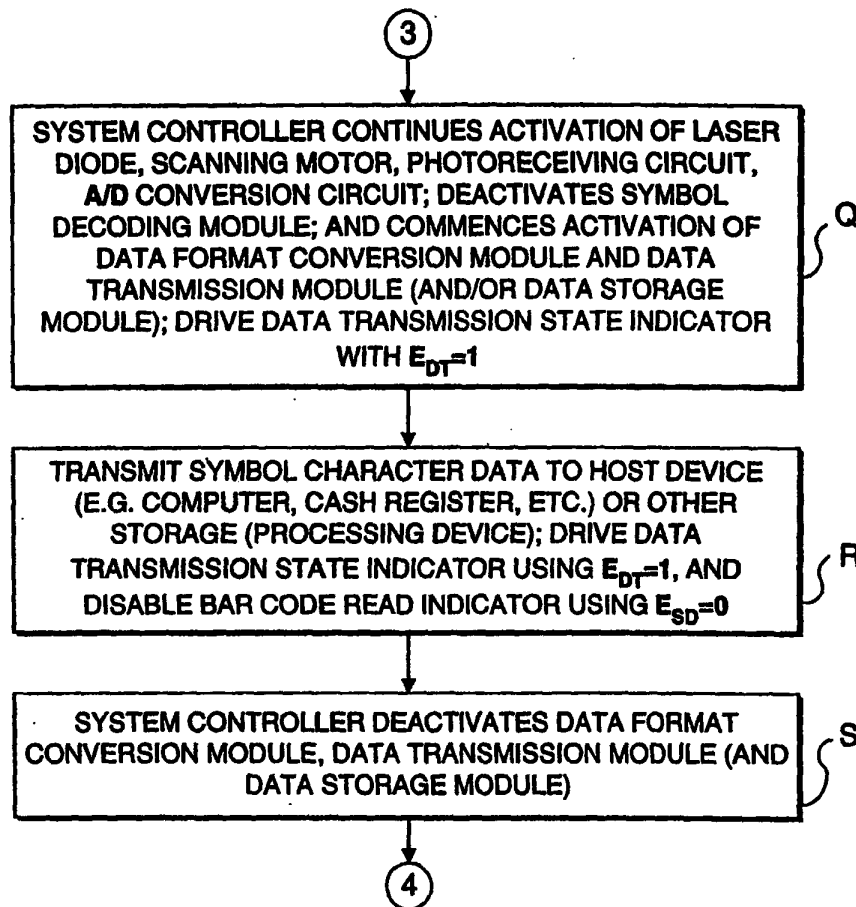


FIG. 27C

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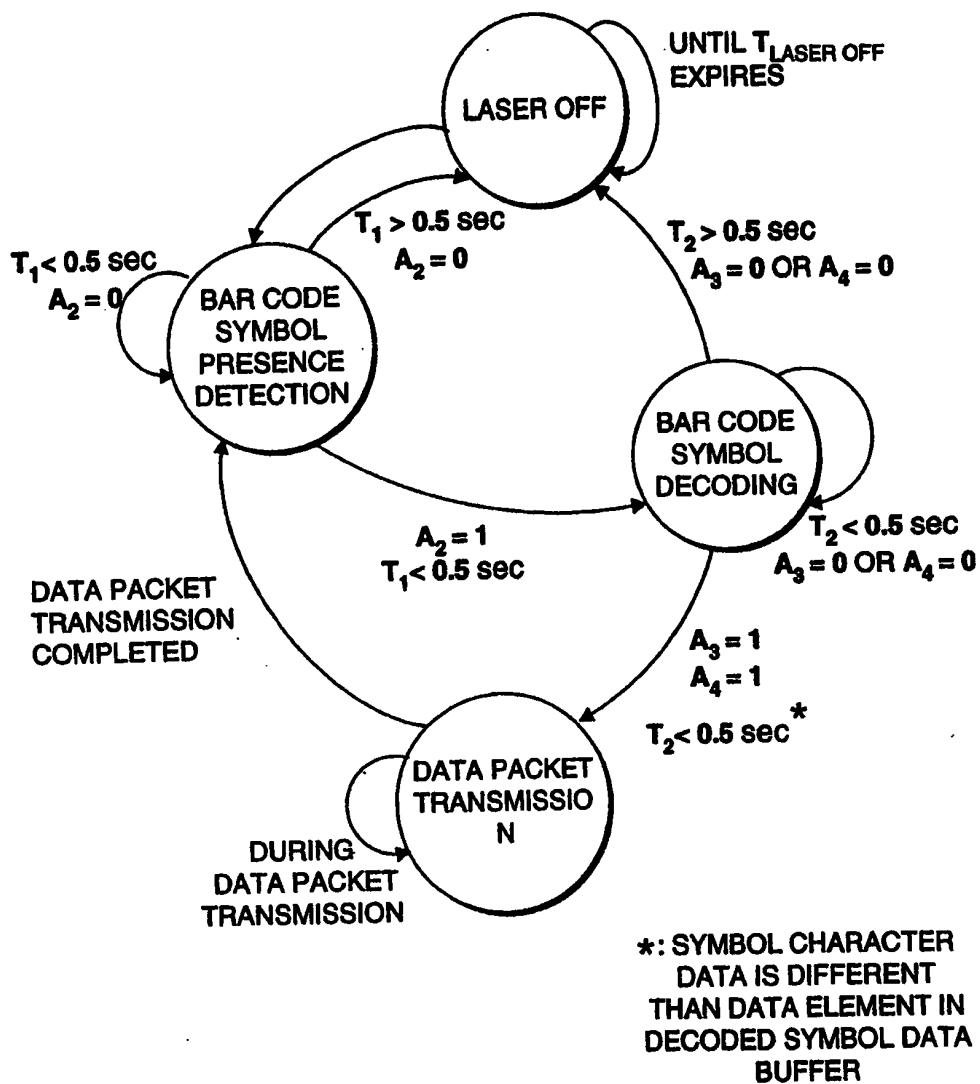


FIG. 28

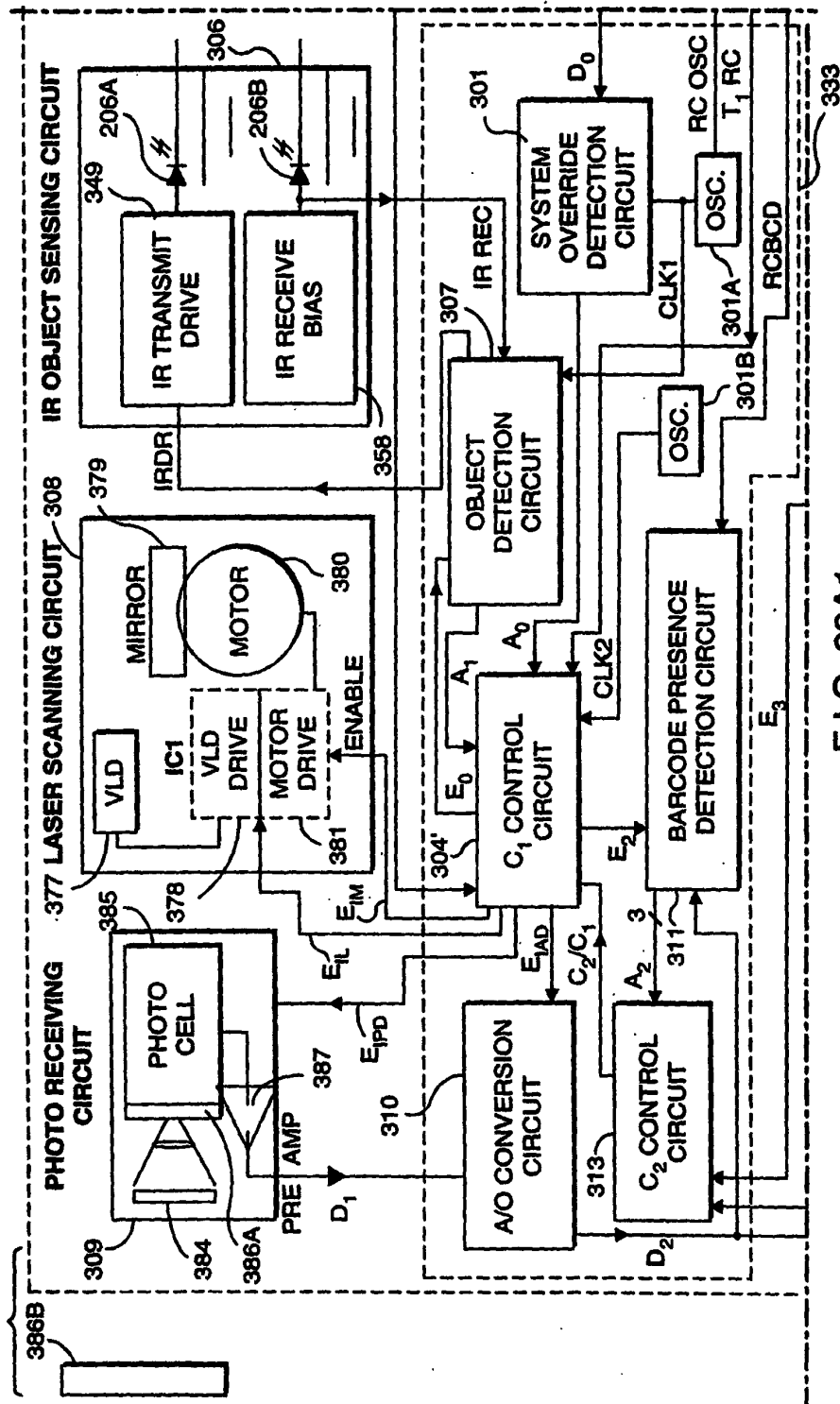


FIG. 29A1

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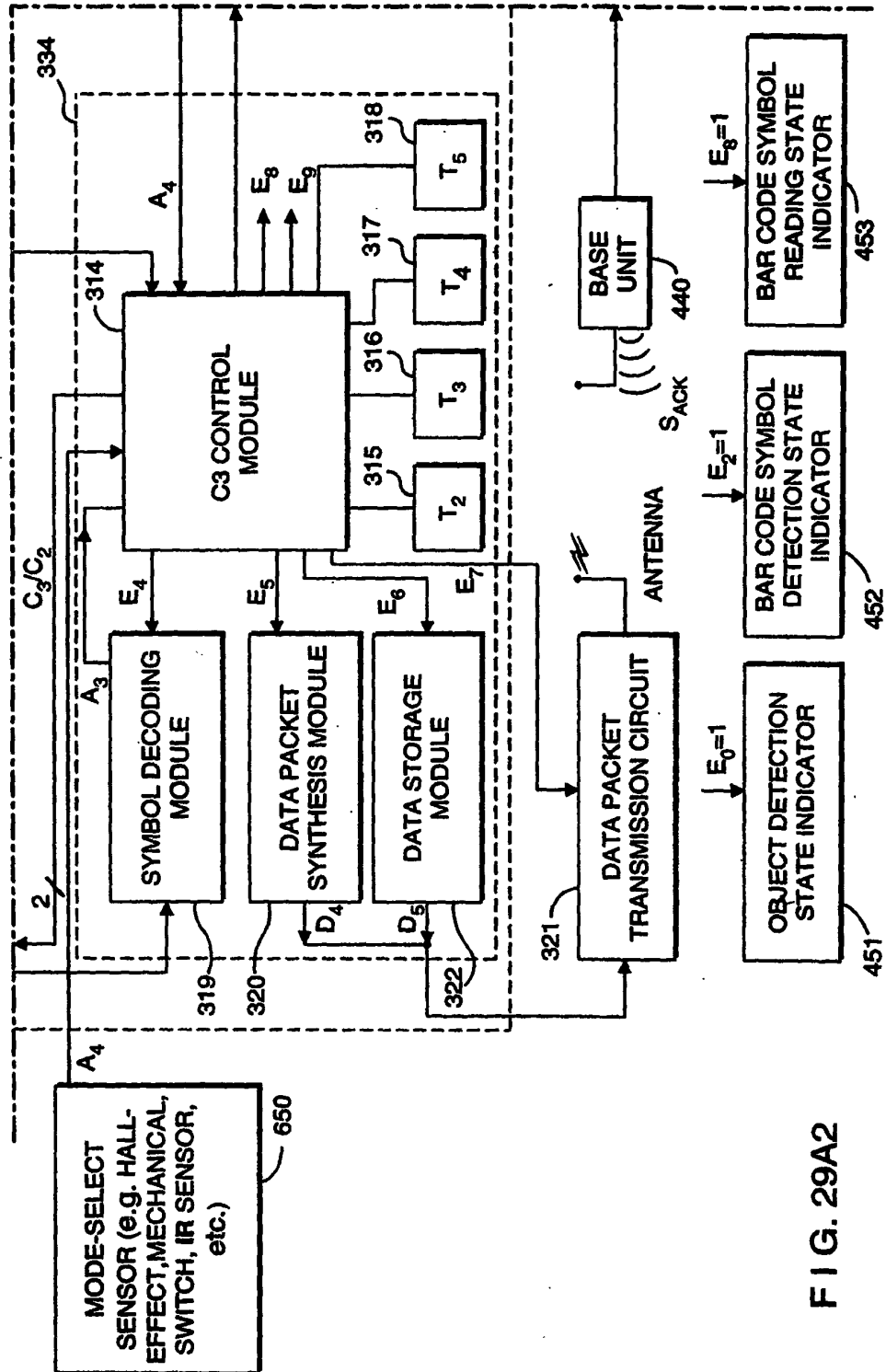


FIG. 29A2

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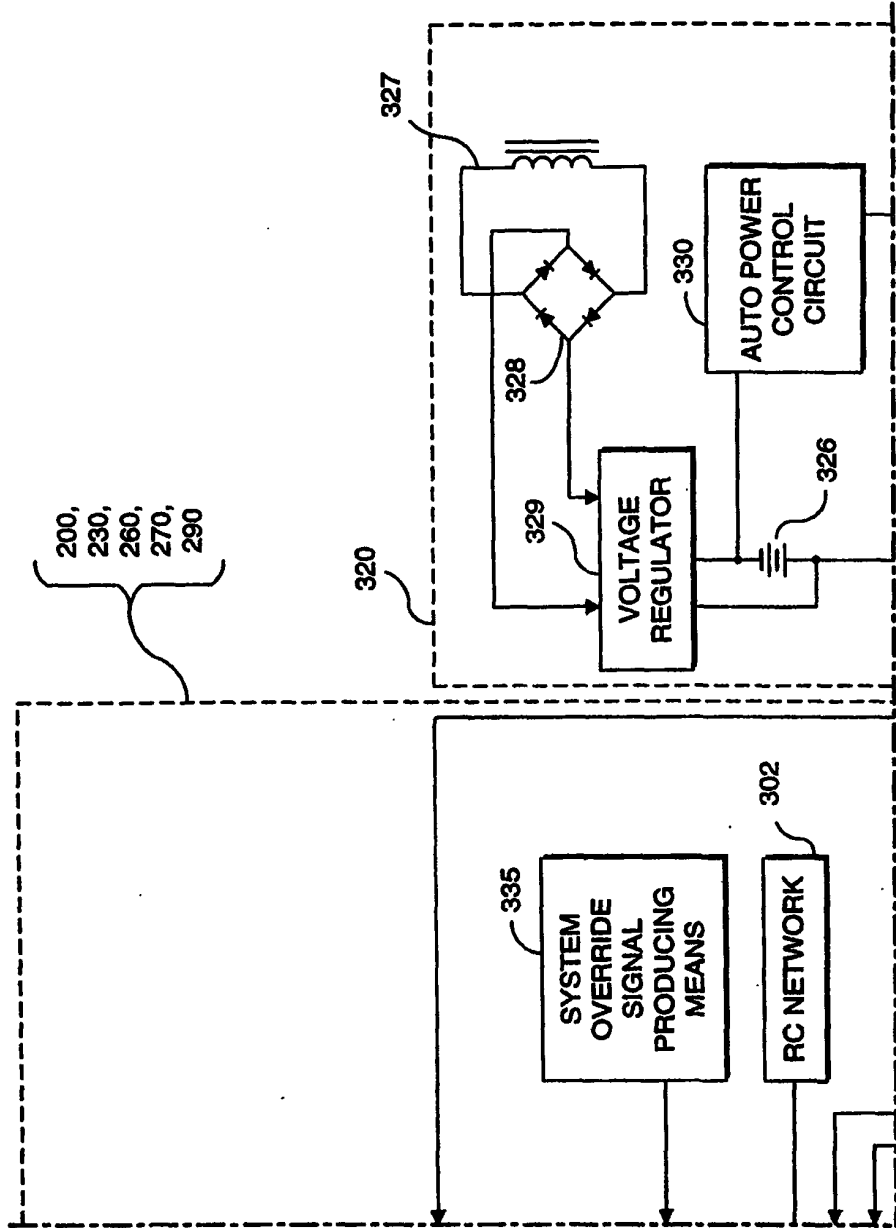


FIG. 29A3

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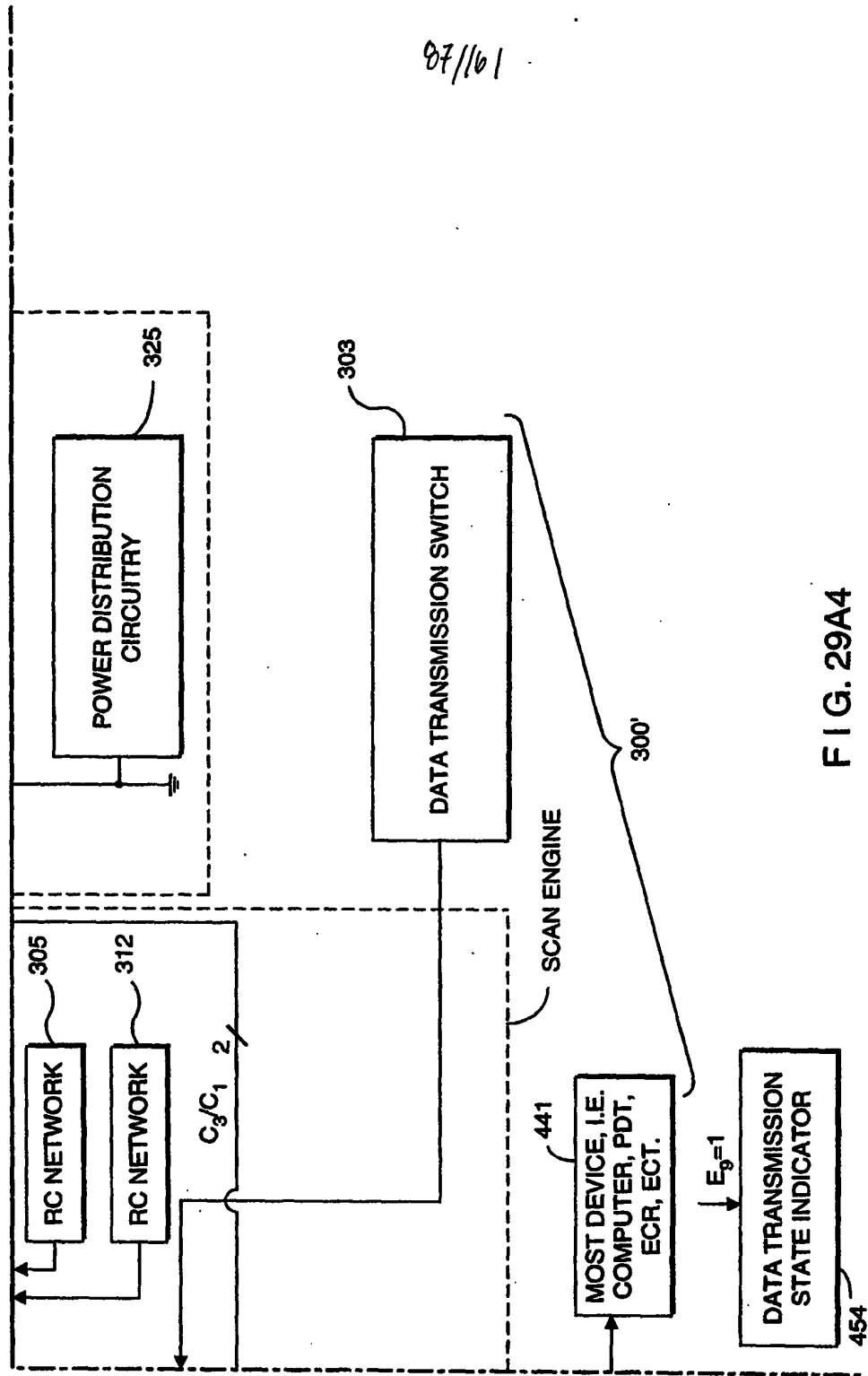


FIG. 29A4

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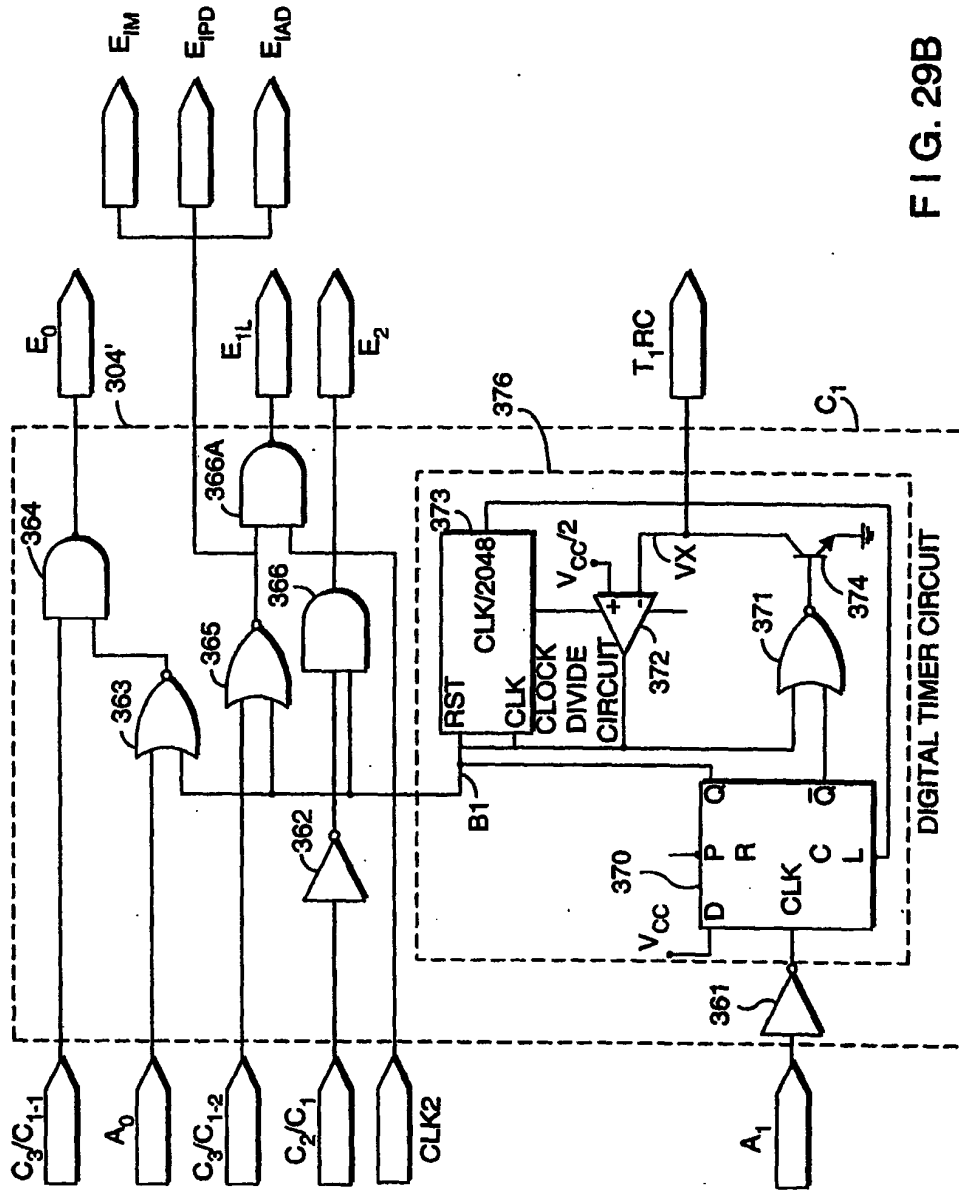


FIG. 29B

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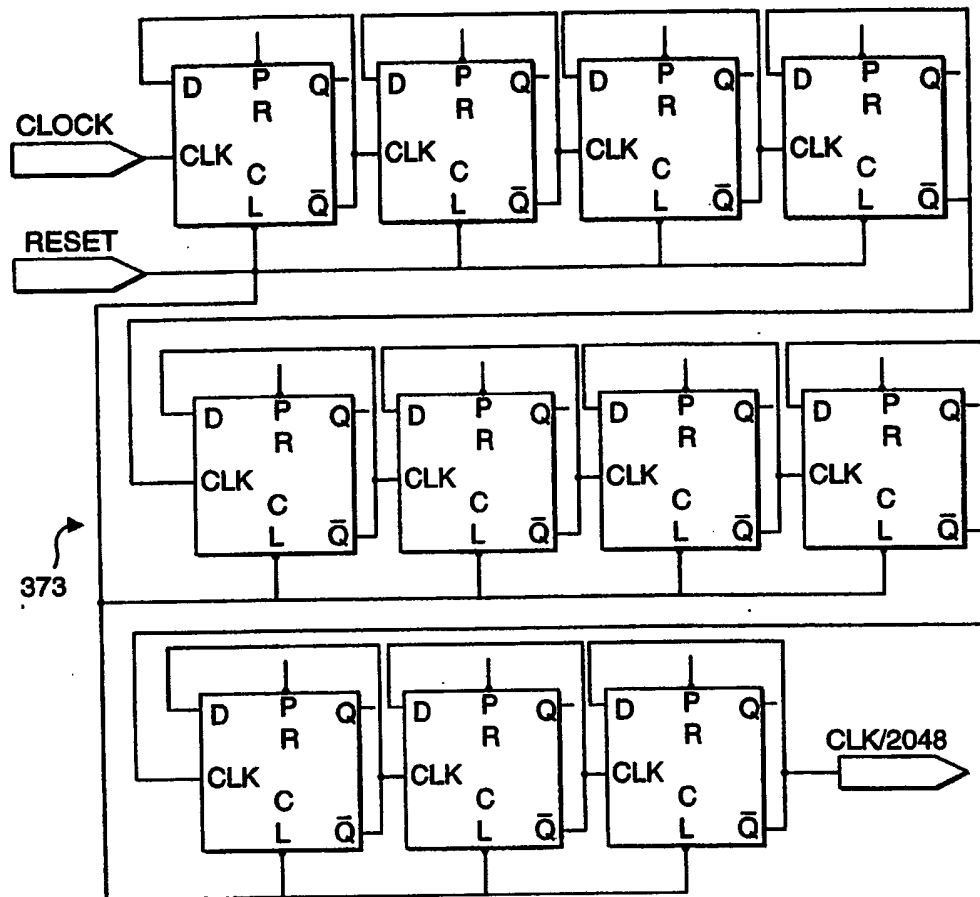


FIG. 29C

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$$\left\{ \begin{array}{l} E_0 = \overline{(B1 + A_0) (C_3 / C_{1-1})} \\ E_{IM} = E_{IPD} = E_{IAD} = \overline{(C_3 / C_{1-2}) + B1} \\ E_L = \overline{[(C_3 / C_{1-1}) + B1] [B2]} \\ E_2 = \overline{(C_2 / C_1) (B1)} \end{array} \right.$$

FIG. 29D

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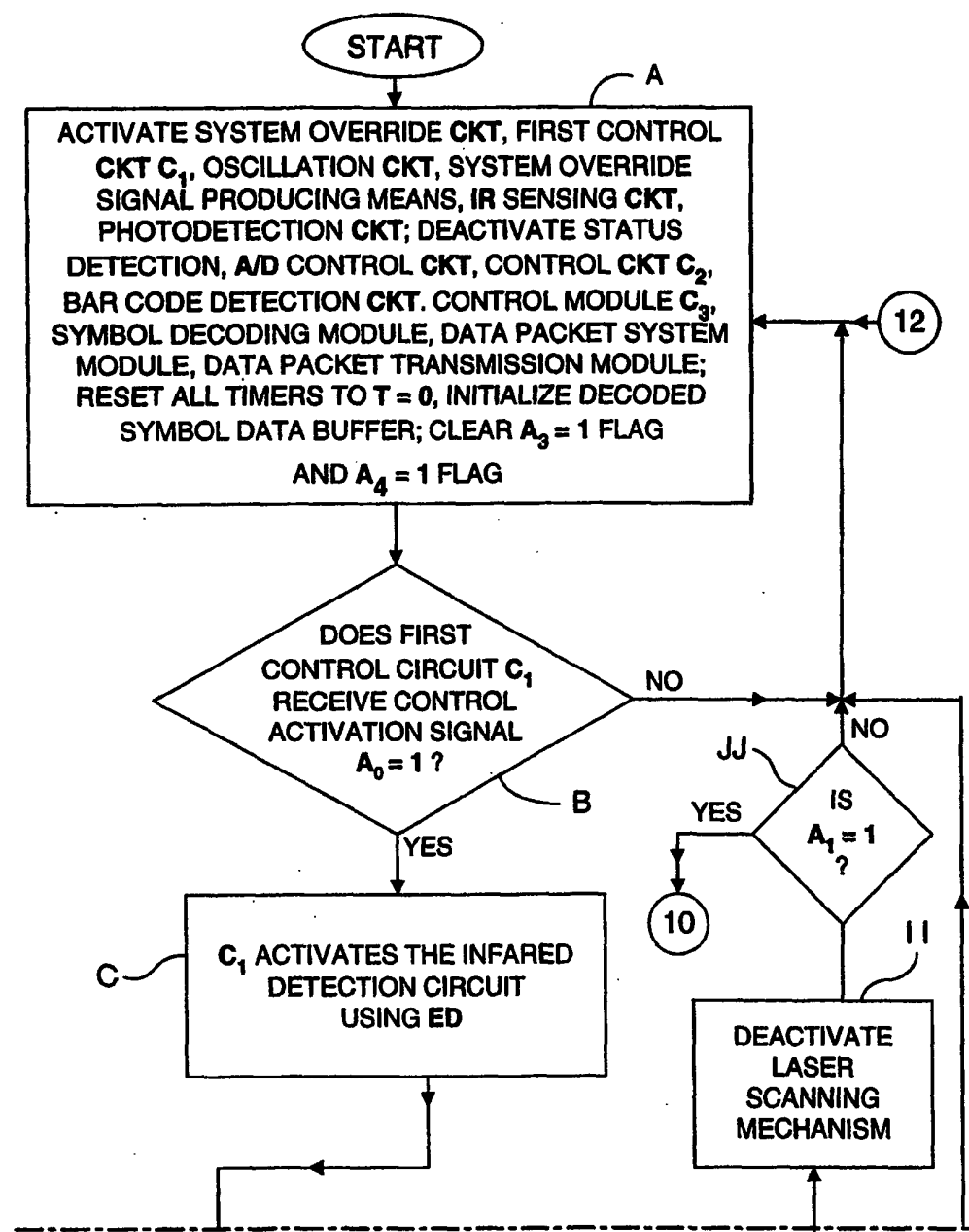


FIG. 30A1

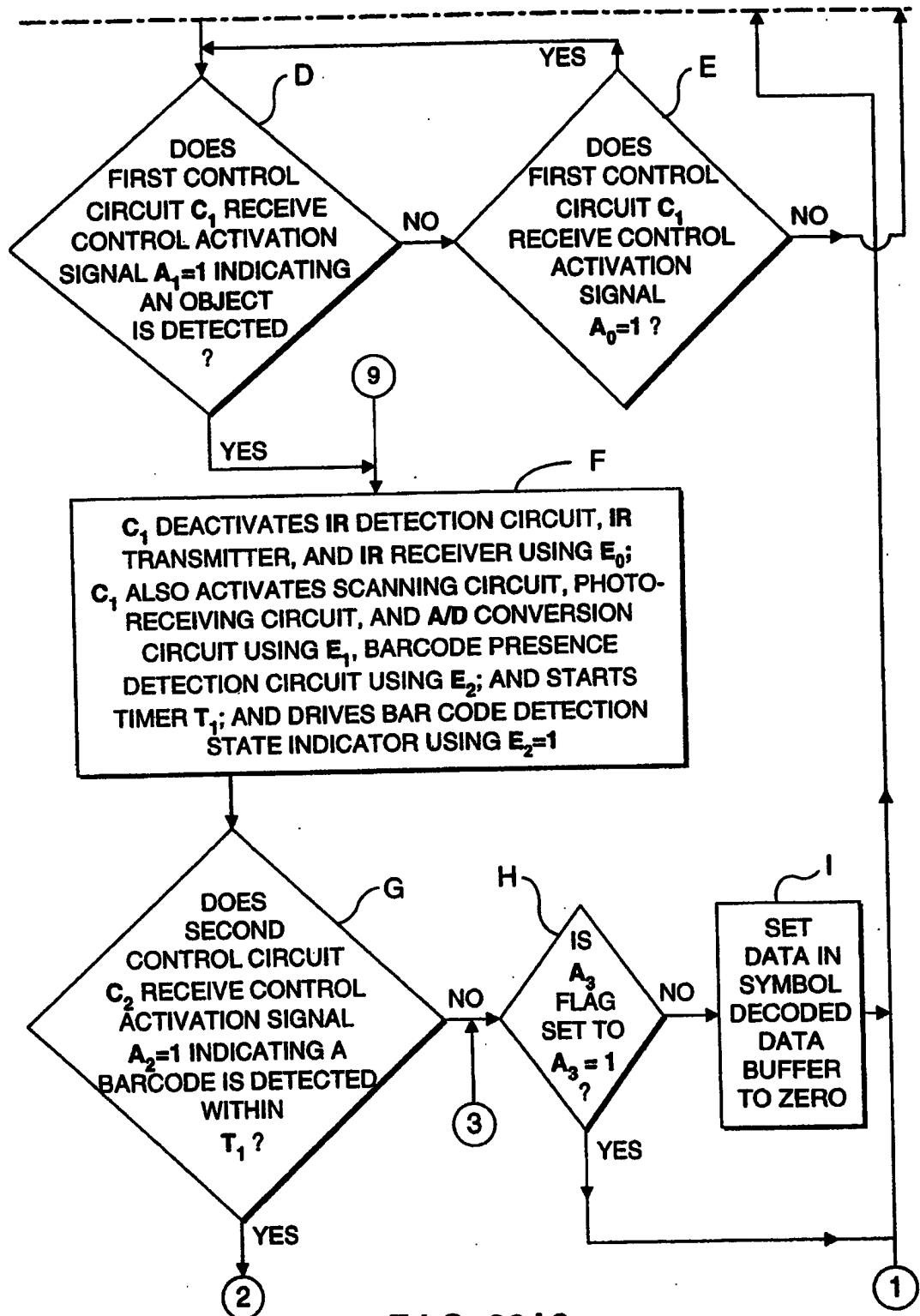
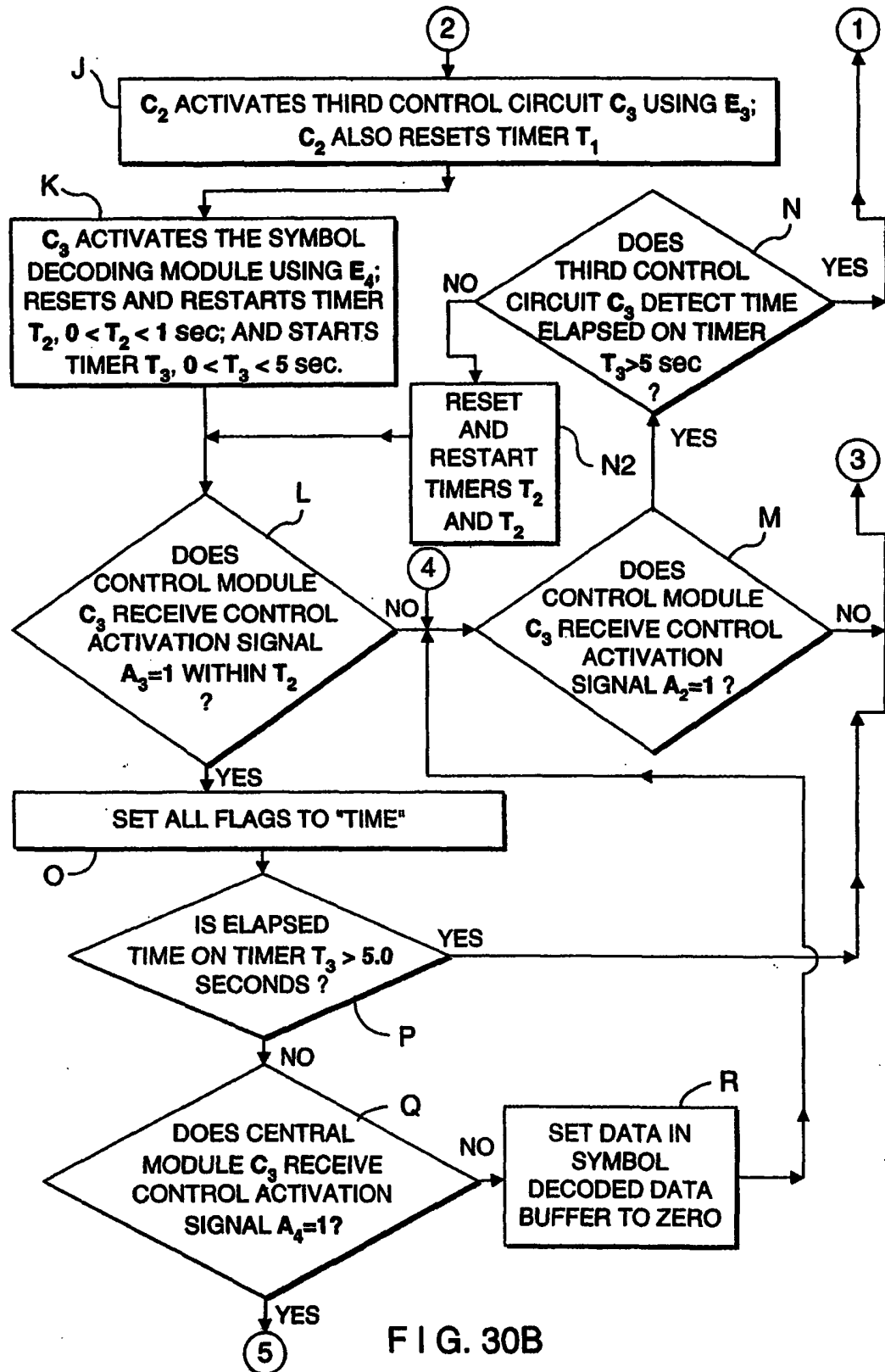


FIG. 30A2



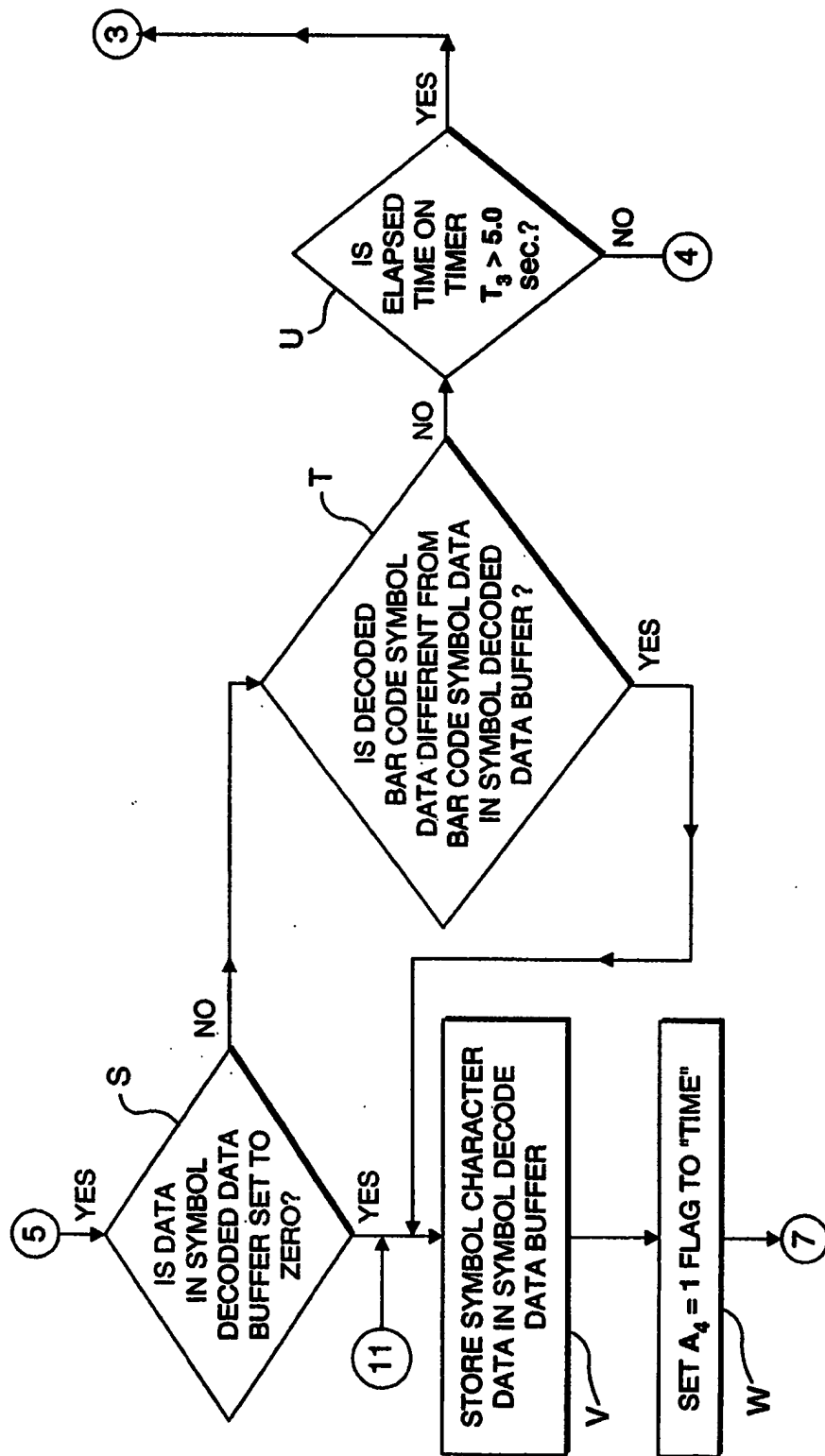


FIG. 30C

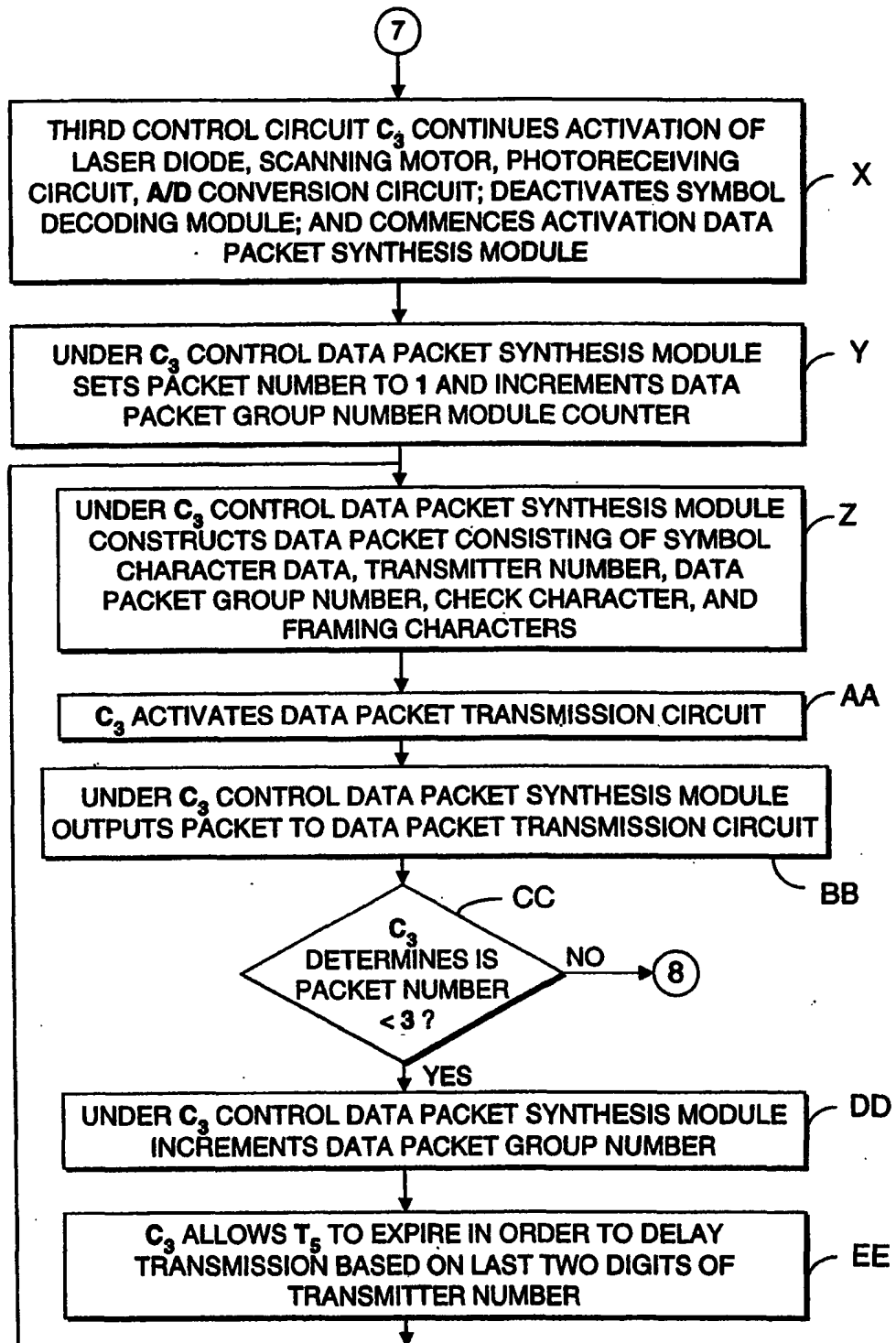


FIG. 30D

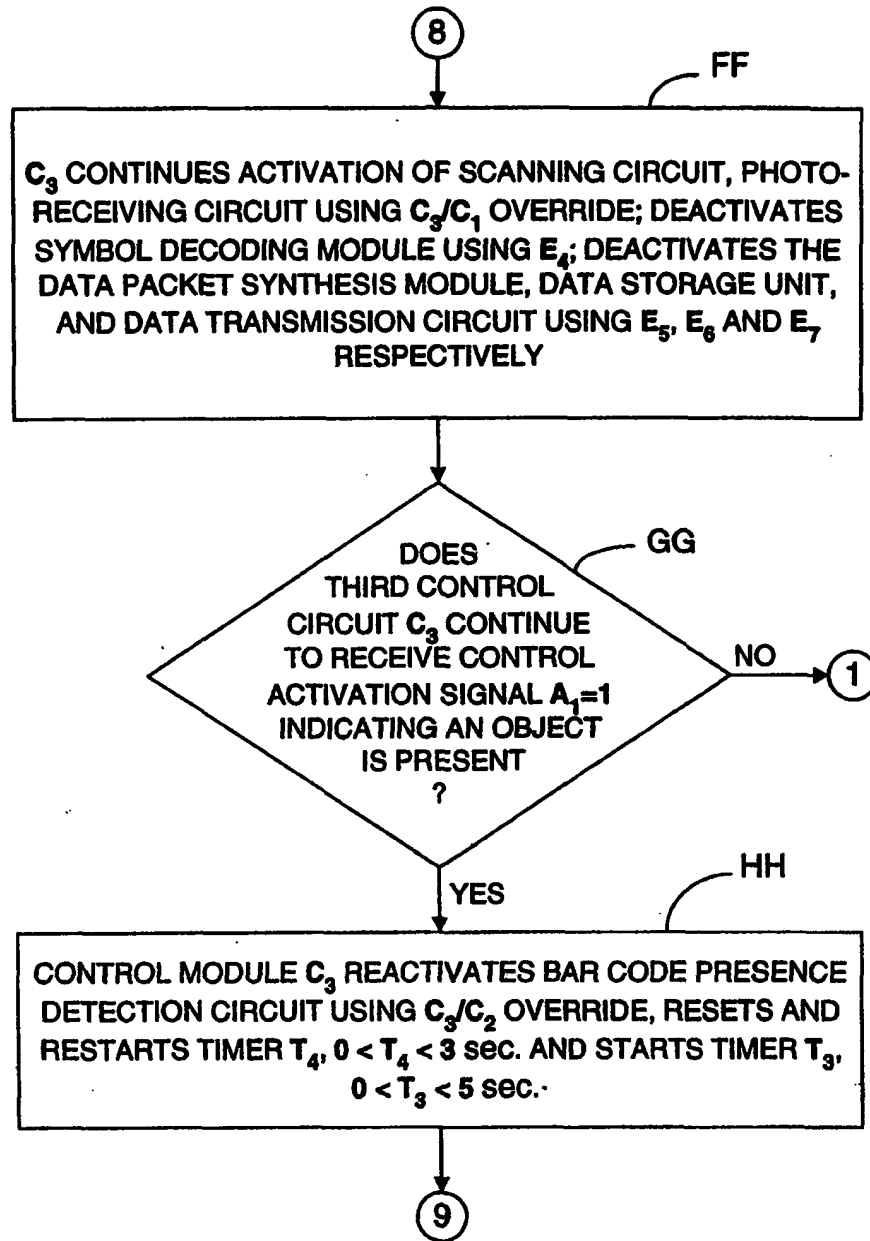


FIG. 30E

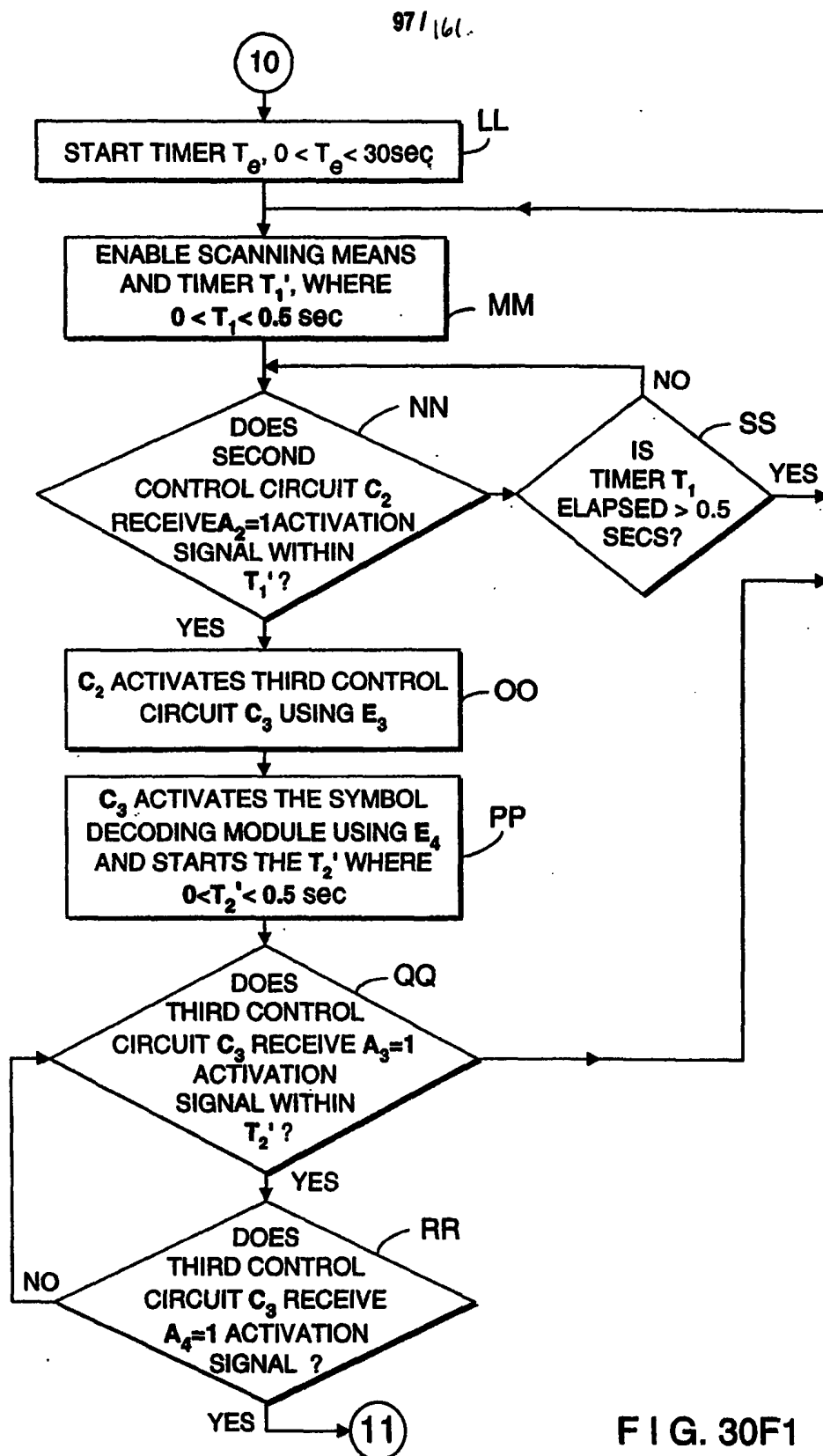
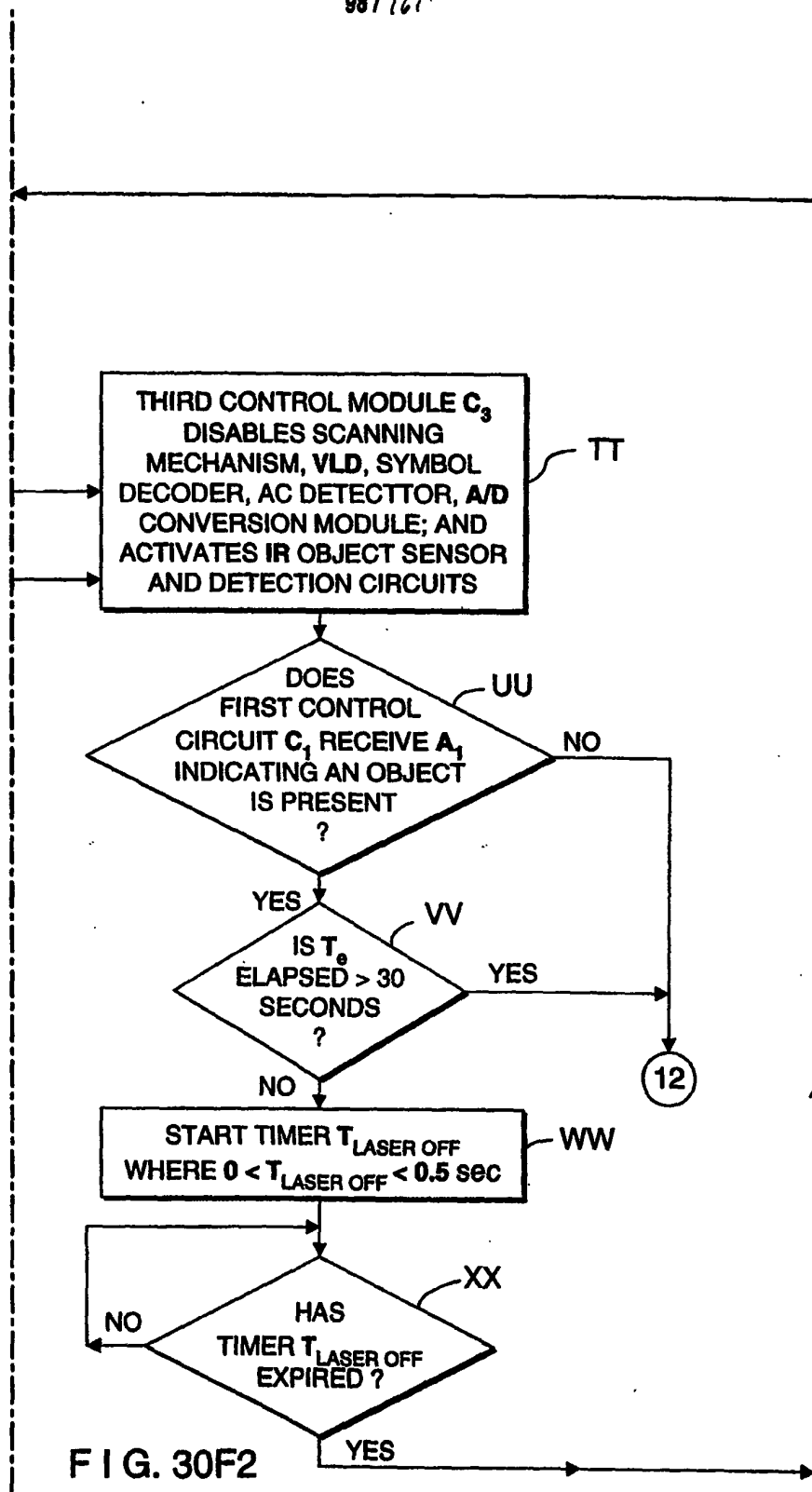


FIG. 30F1



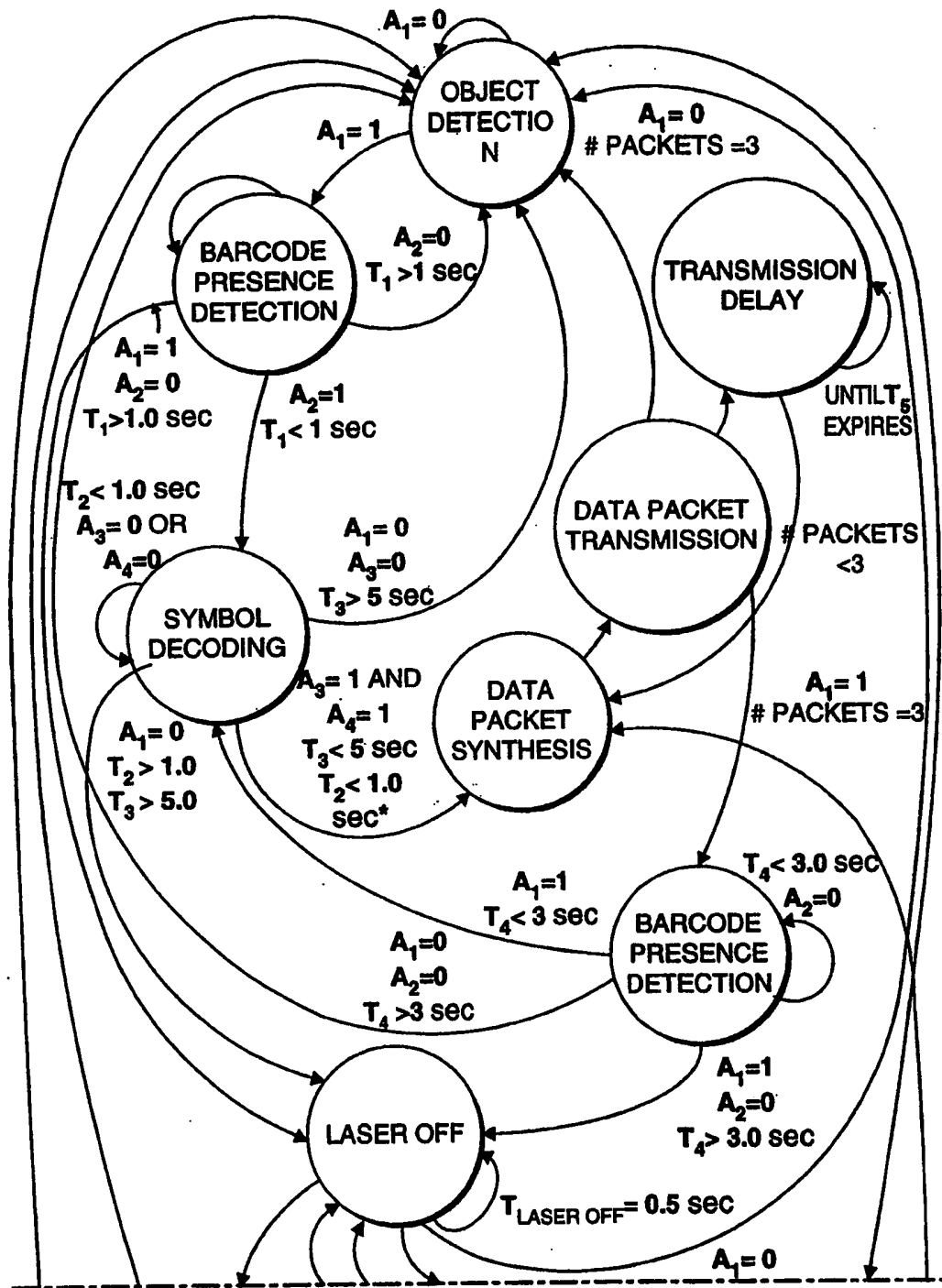


FIG. 31A

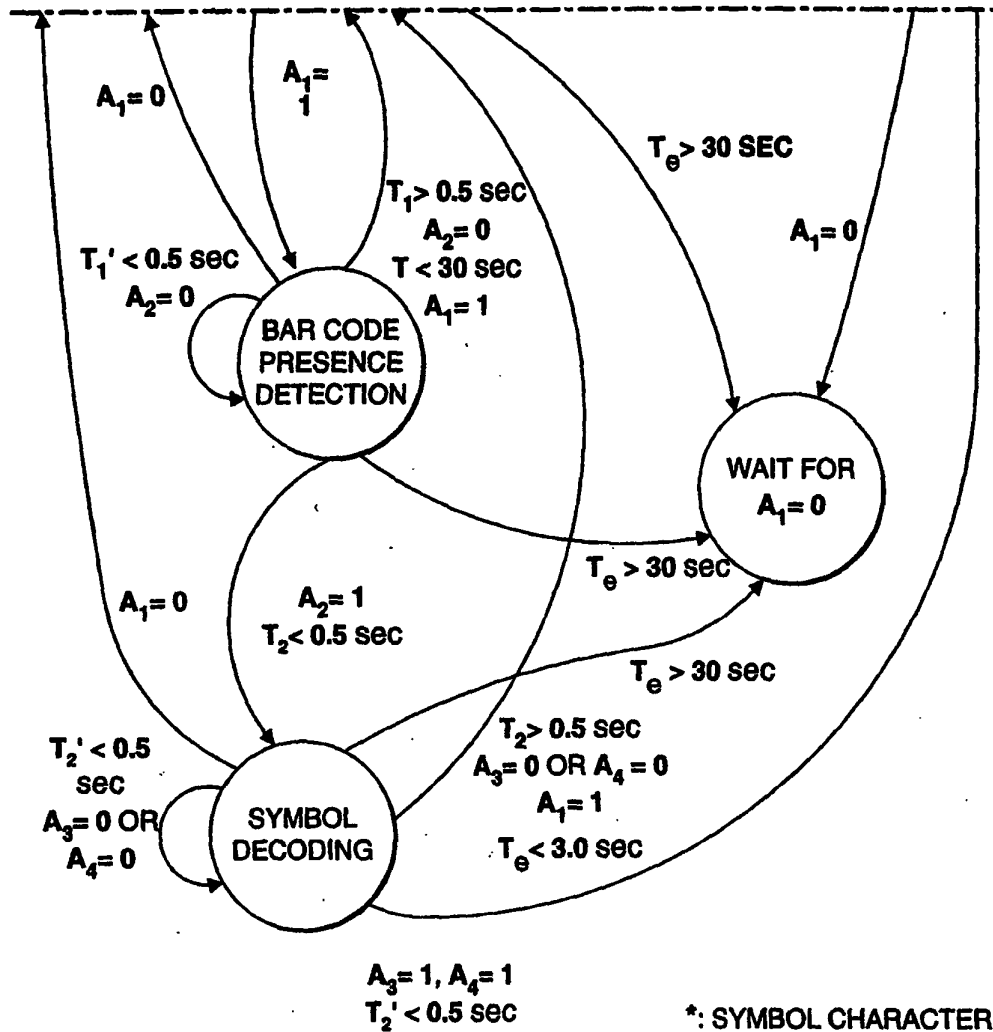


FIG. 31B

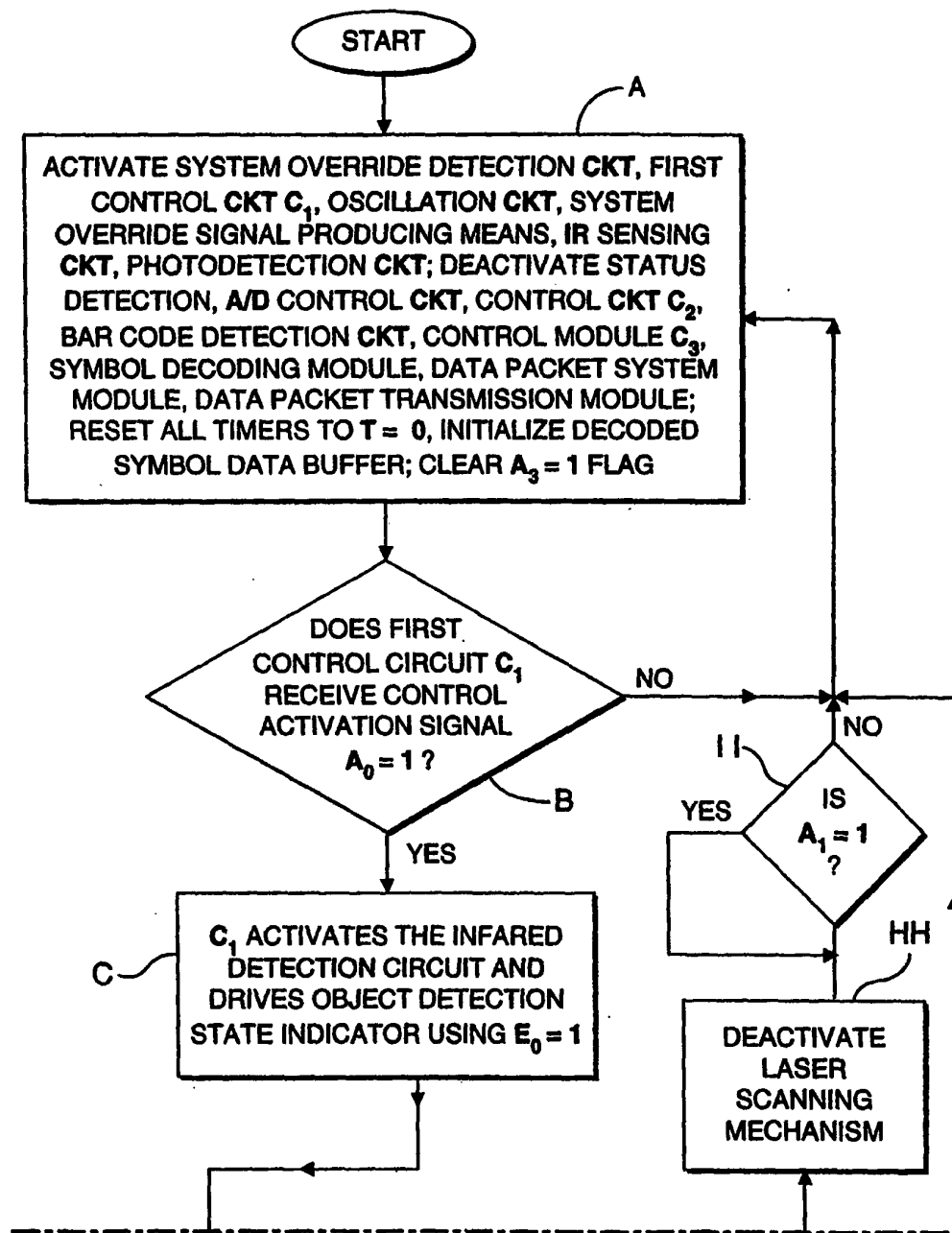


FIG. 32A1

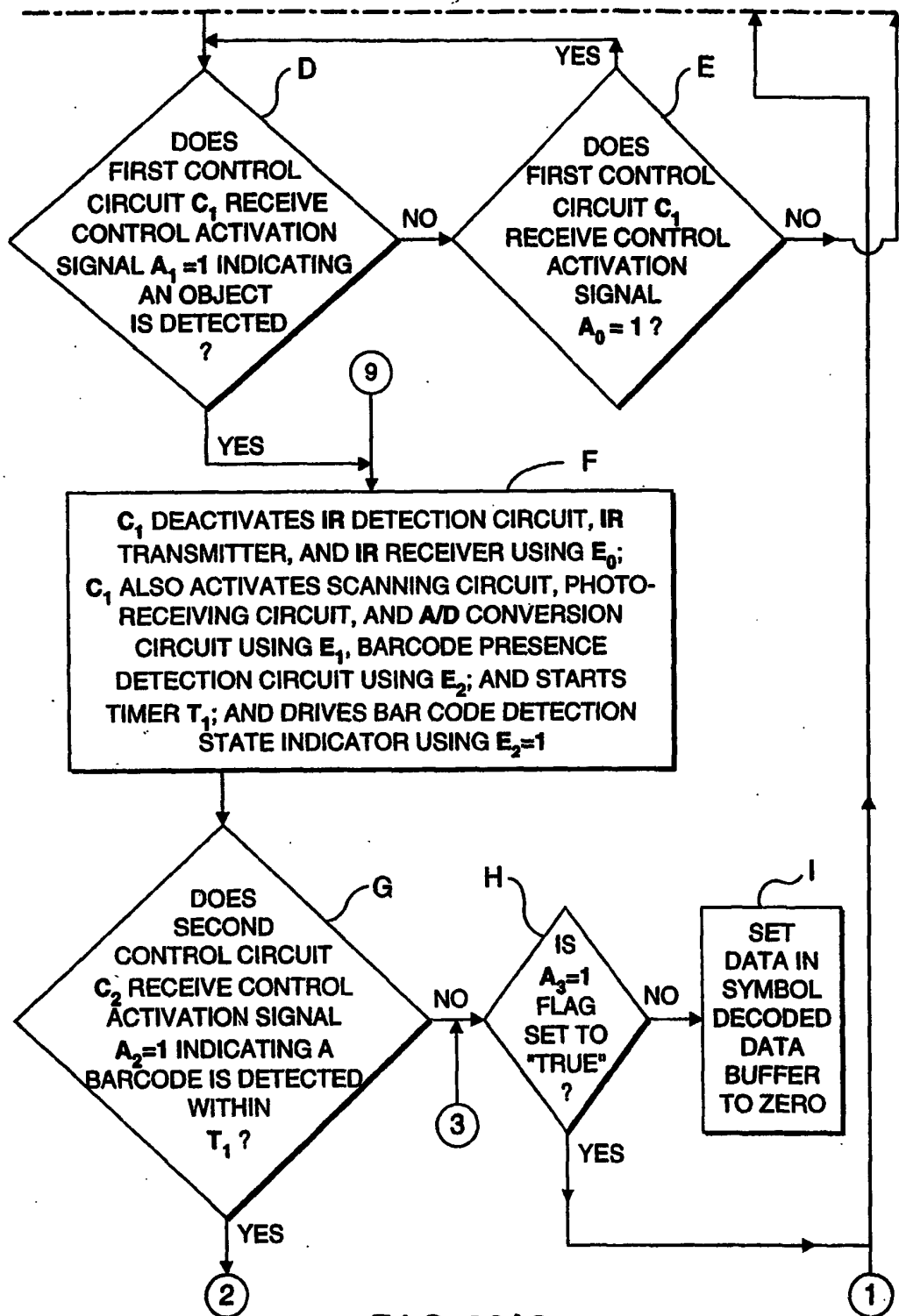


FIG. 32A2

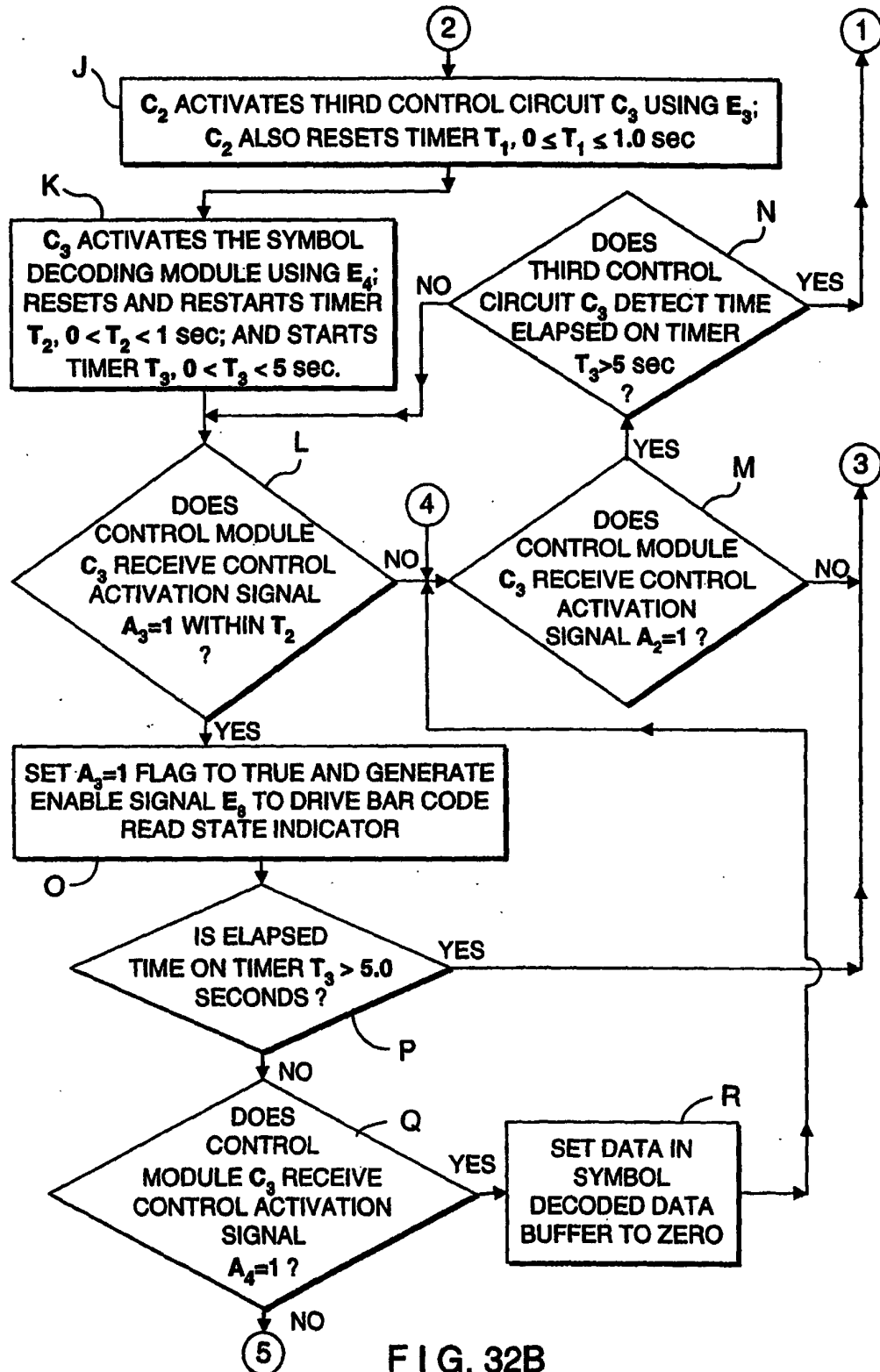
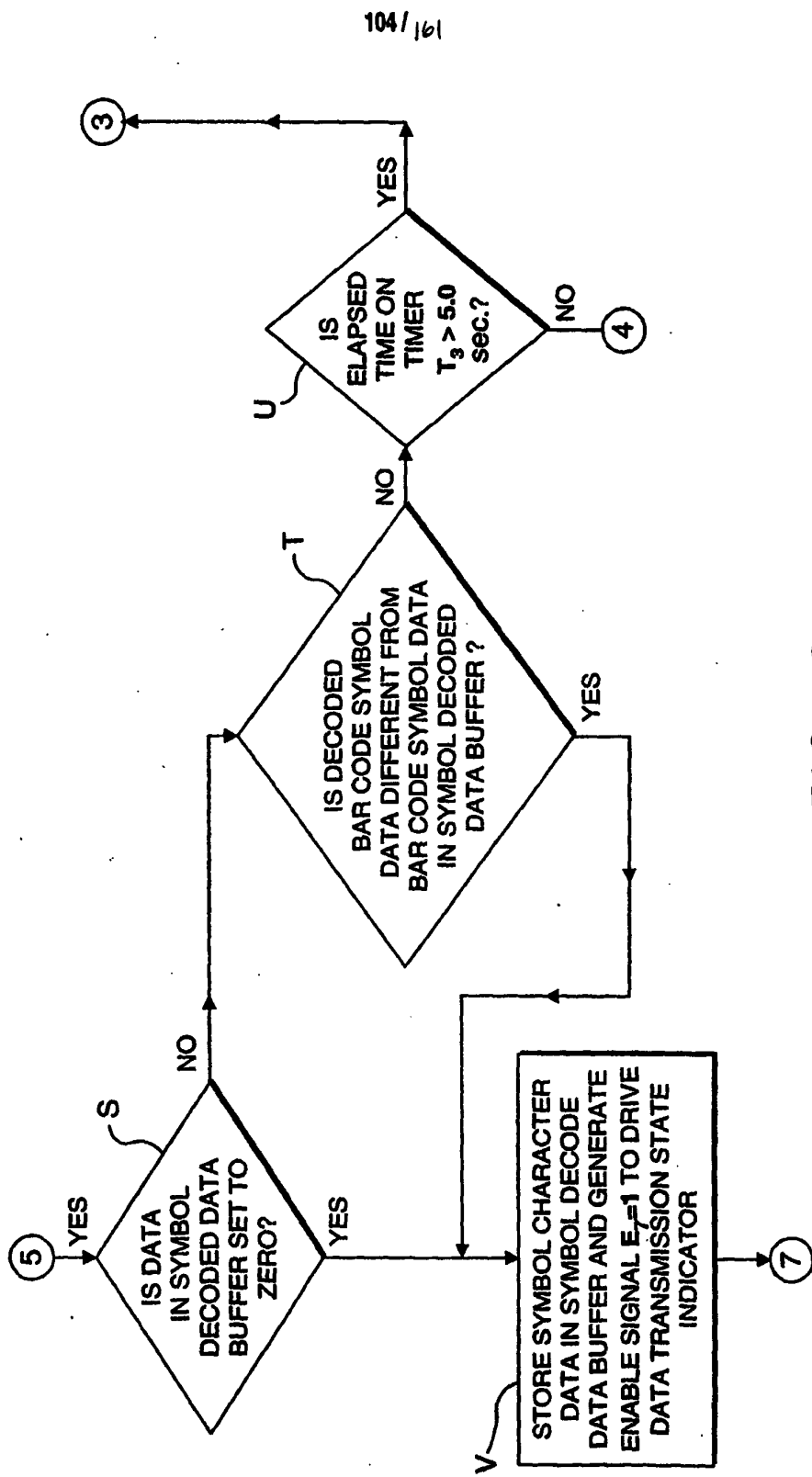


FIG. 32B



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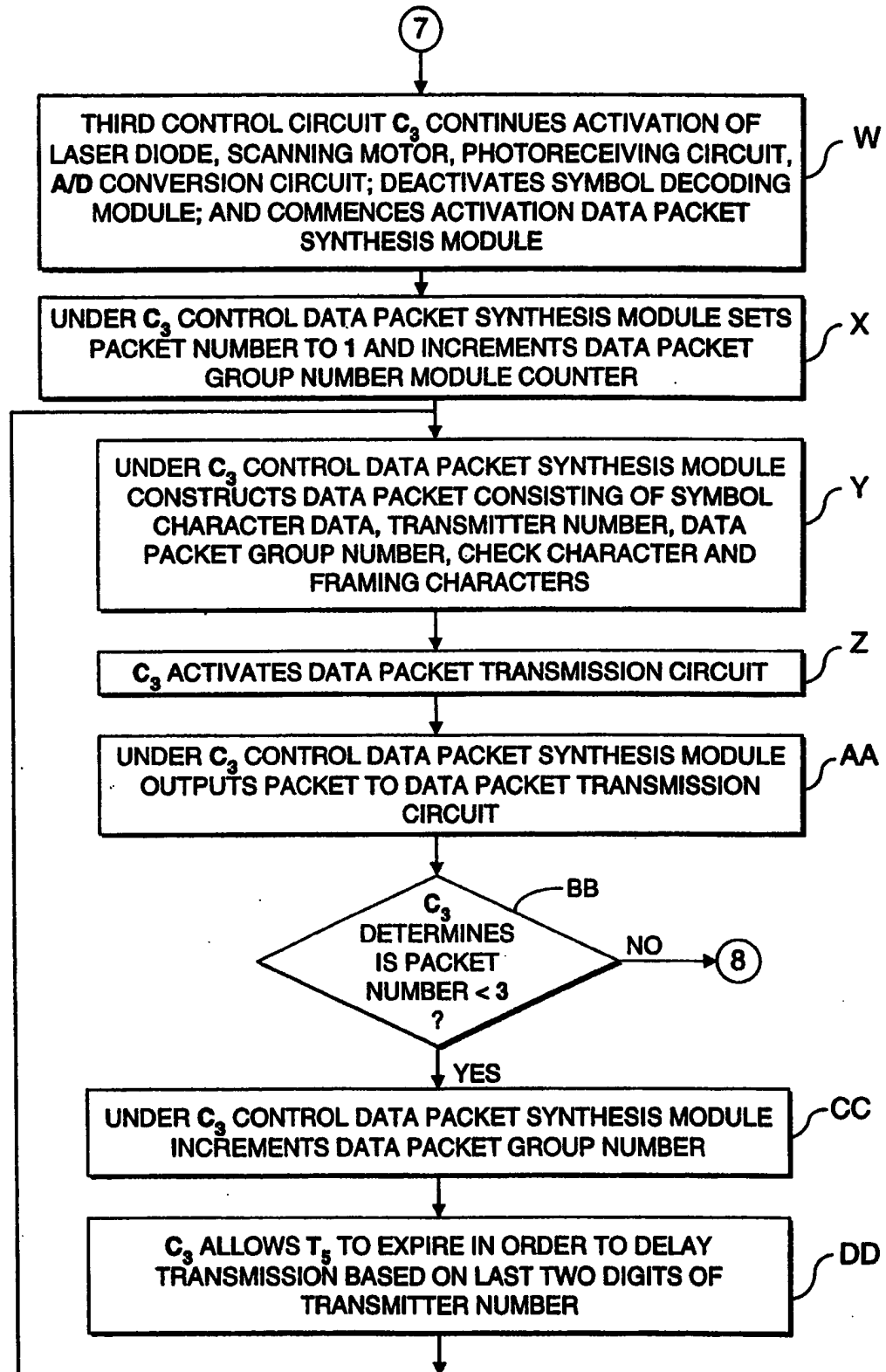


FIG. 32D

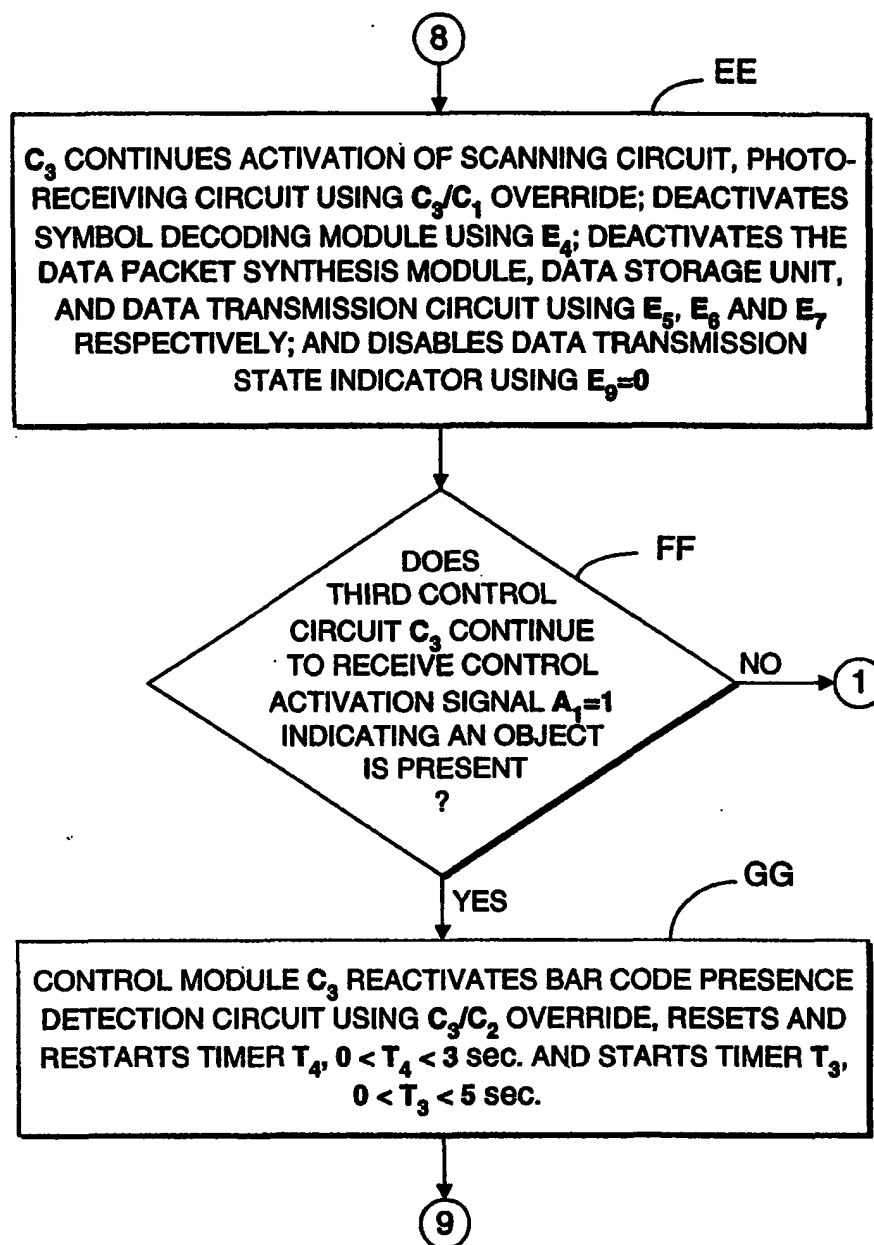


FIG. 32E

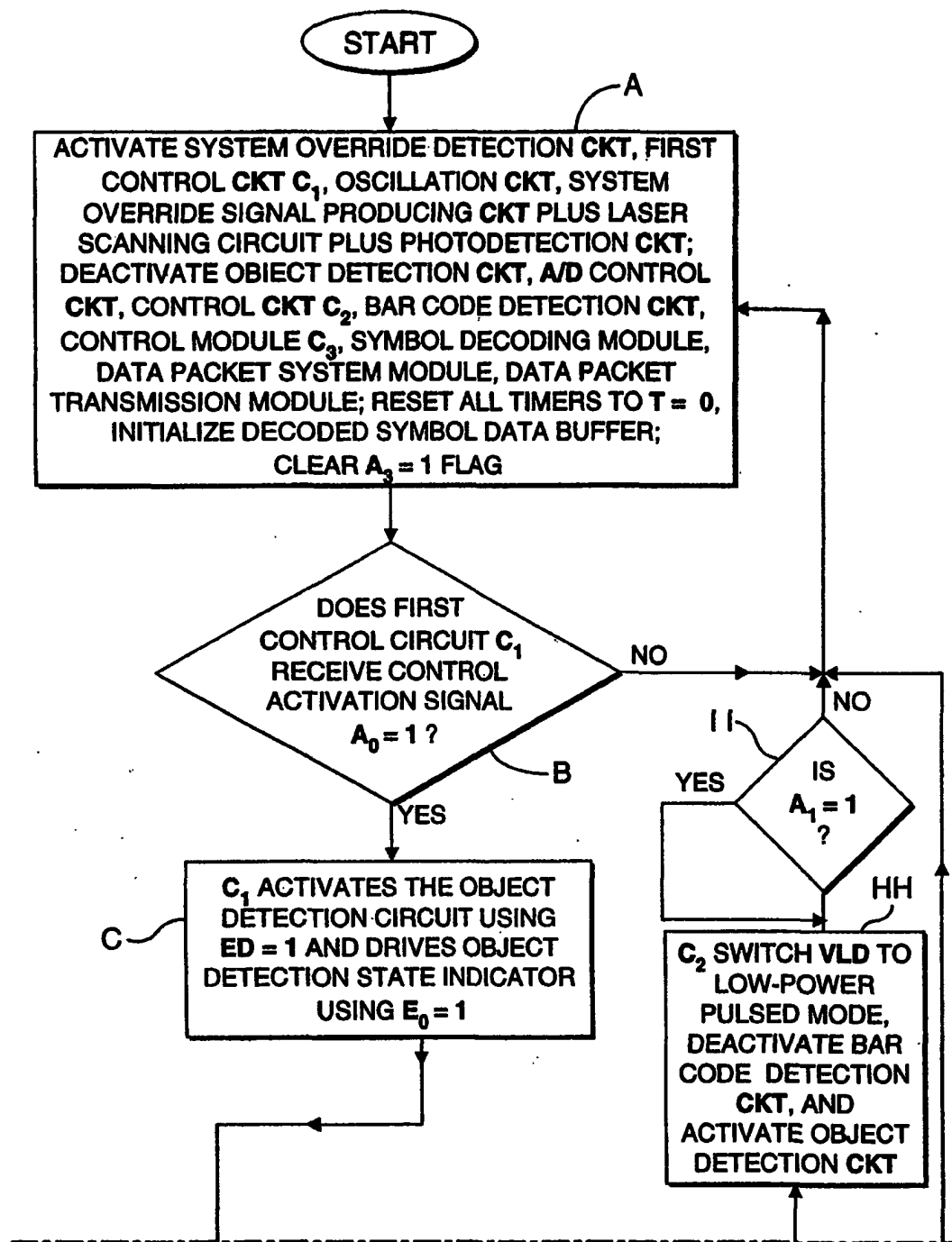


FIG. 33A1

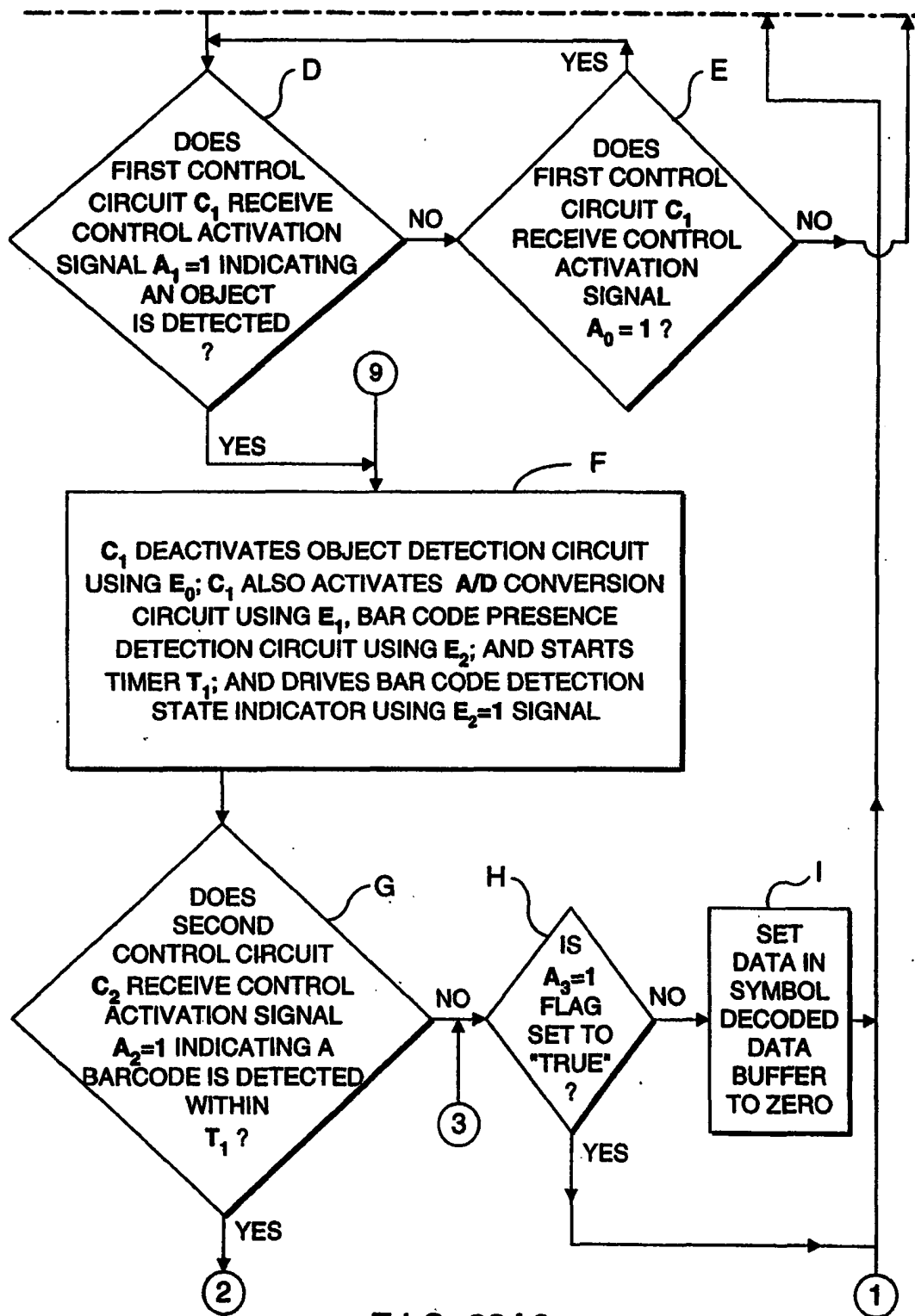
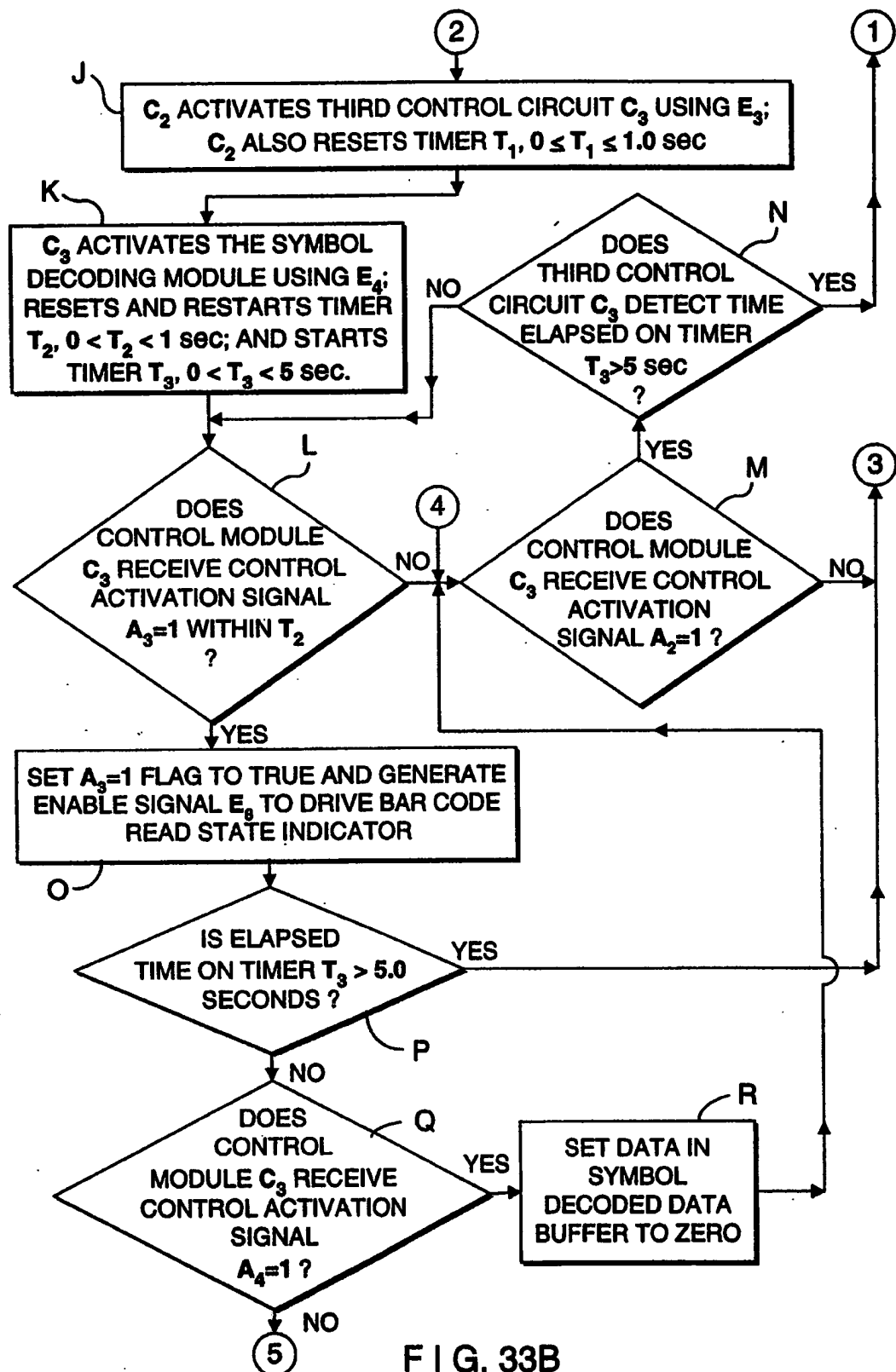


FIG. 33A2



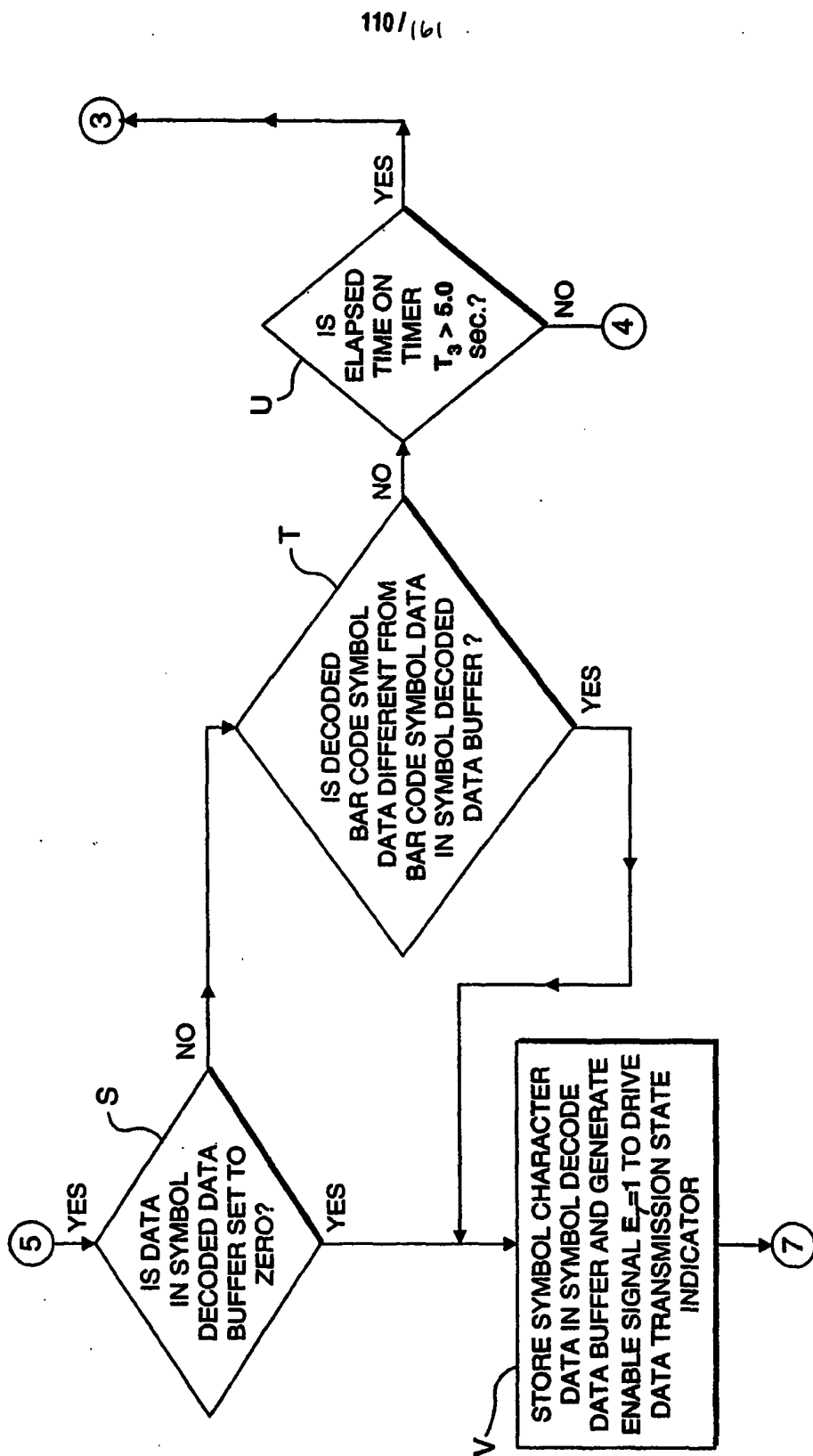


FIG. 33C

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7

THIRD CONTROL CIRCUIT C_3 CONTINUES ACTIVATION OF LASER DIODE, SCANNING MOTOR, PHOTORECEIVING CIRCUIT, A/D CONVERSION CIRCUIT; DEACTIVATES SYMBOL DECODING MODULE; AND COMMENCES ACTIVATION DATA PACKET SYNTHESIS MODULE

W

UNDER C_3 CONTROL DATA PACKET SYNTHESIS MODULE SETS PACKET NUMBER TO 1 AND INCREMENTS DATA PACKET GROUP NUMBER MODULE COUNTER

X

UNDER C_3 CONTROL DATA PACKET SYNTHESIS MODULE CONSTRUCTS DATA PACKET CONSISTING OF SYMBOL CHARACTER DATA, TRANSMITTER NUMBER, DATA PACKET GROUP NUMBER, CHECK CHARACTER AND FRAMING CHARACTERS

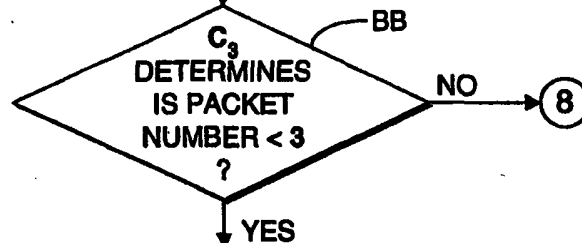
Y

C_3 ACTIVATES DATA PACKET TRANSMISSION CIRCUIT

Z

UNDER C_3 CONTROL DATA PACKET SYNTHESIS MODULE OUTPUTS PACKET TO DATA PACKET TRANSMISSION CIRCUIT

AA



8

UNDER C_3 CONTROL DATA PACKET SYNTHESIS MODULE INCREMENTS DATA PACKET GROUP NUMBER

CC

C_3 ALLOWS T_5 TO EXPIRE IN ORDER TO DELAY TRANSMISSION BASED ON LAST TWO DIGITS OF TRANSMITTER NUMBER

DD

FIG. 33D

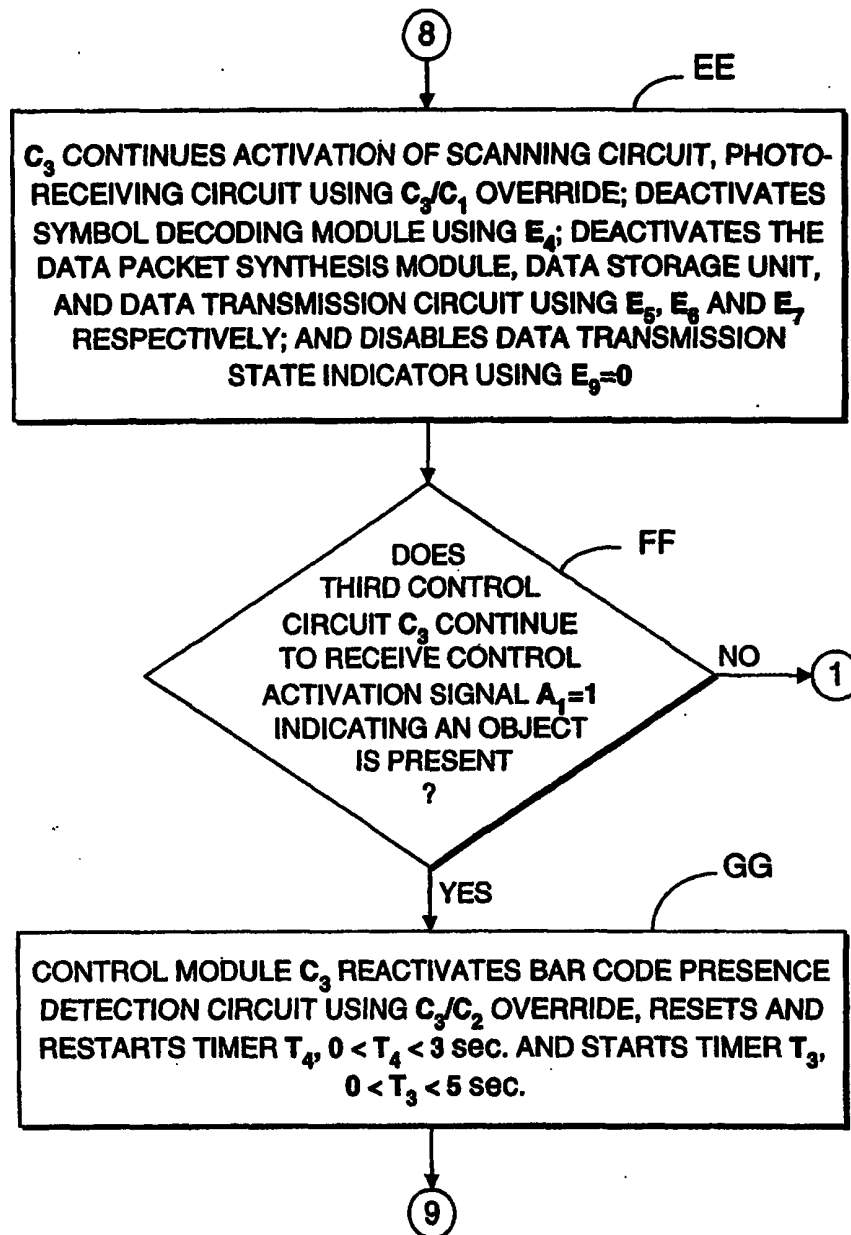
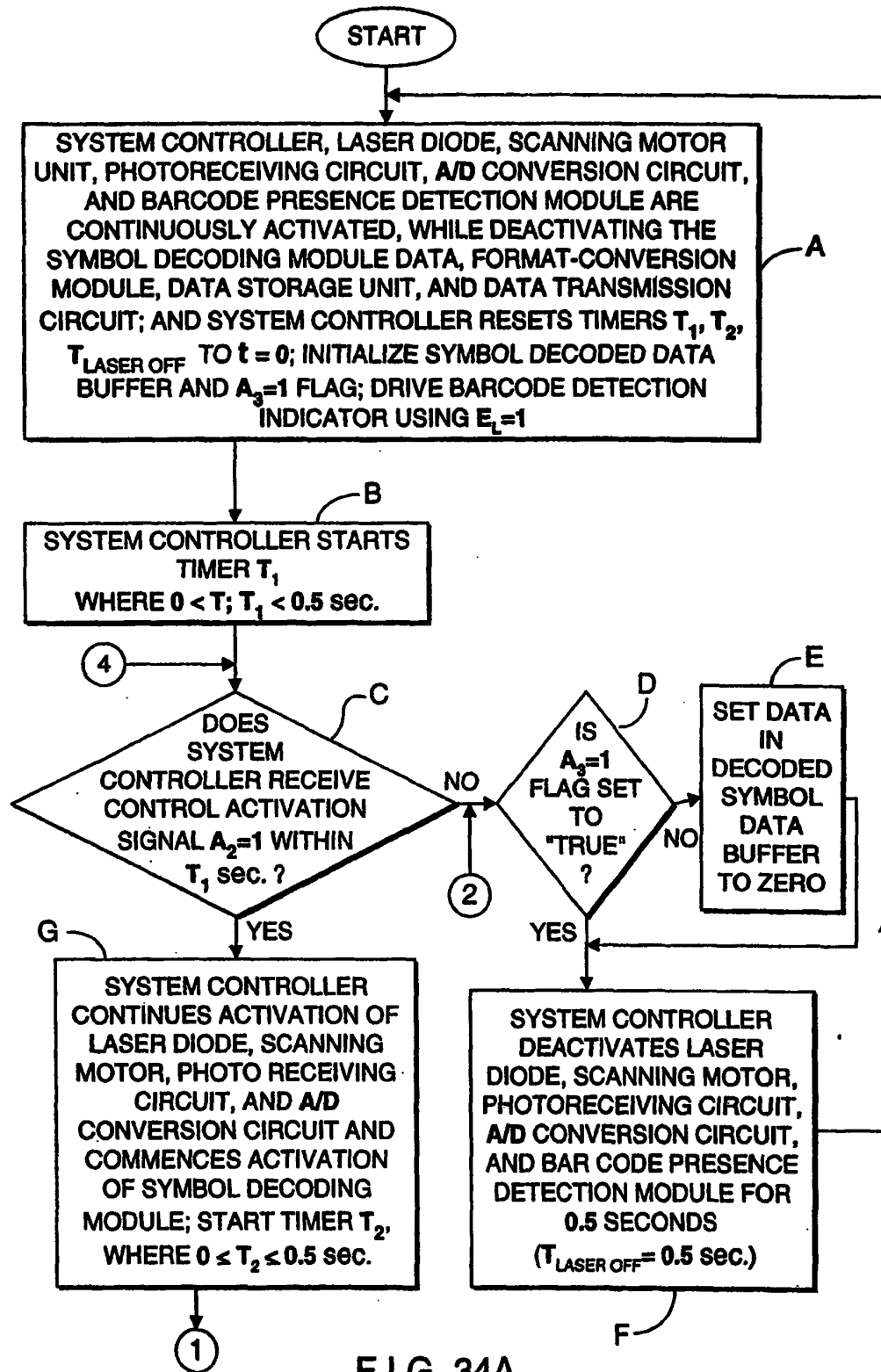


FIG. 33E



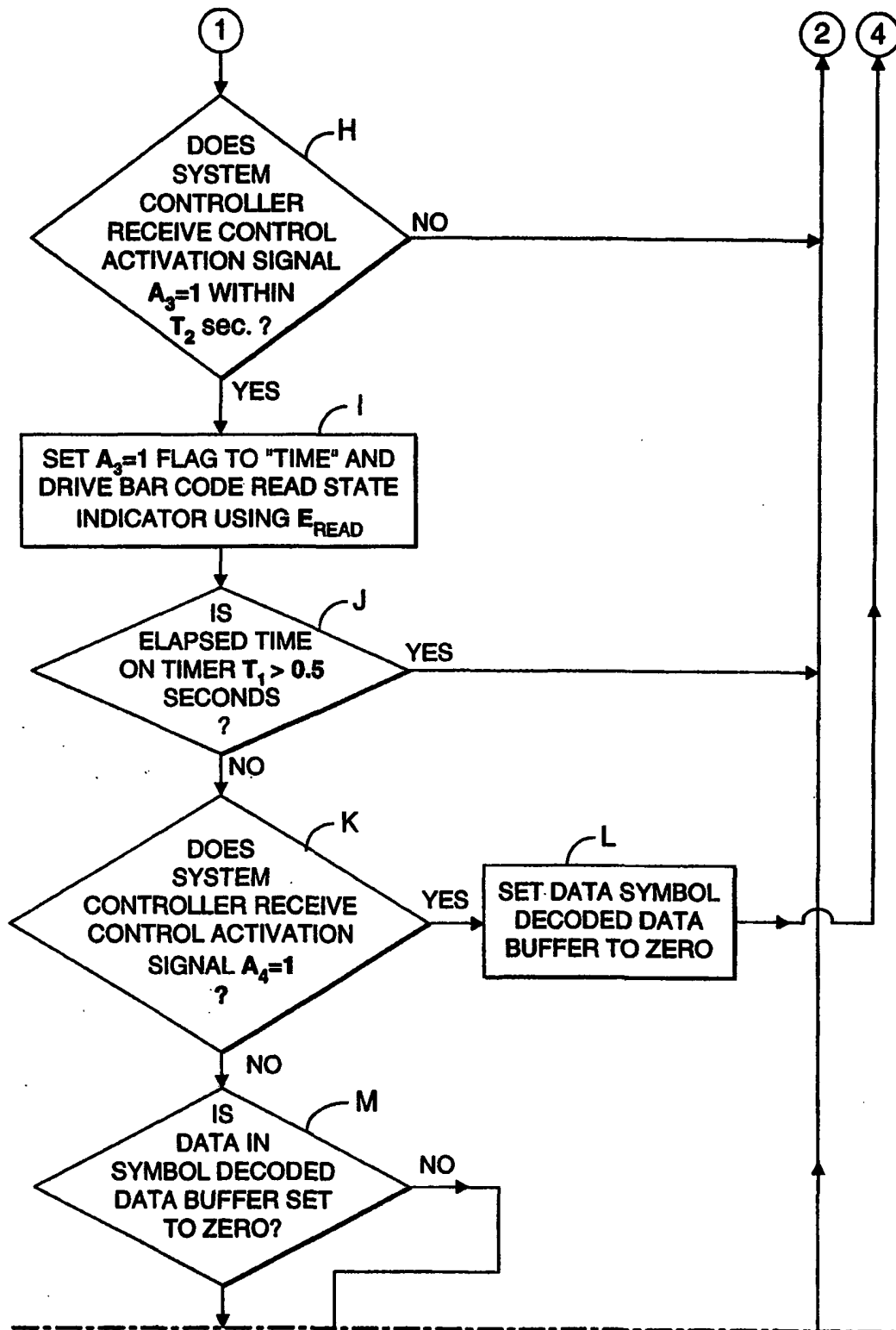


FIG. 34B1

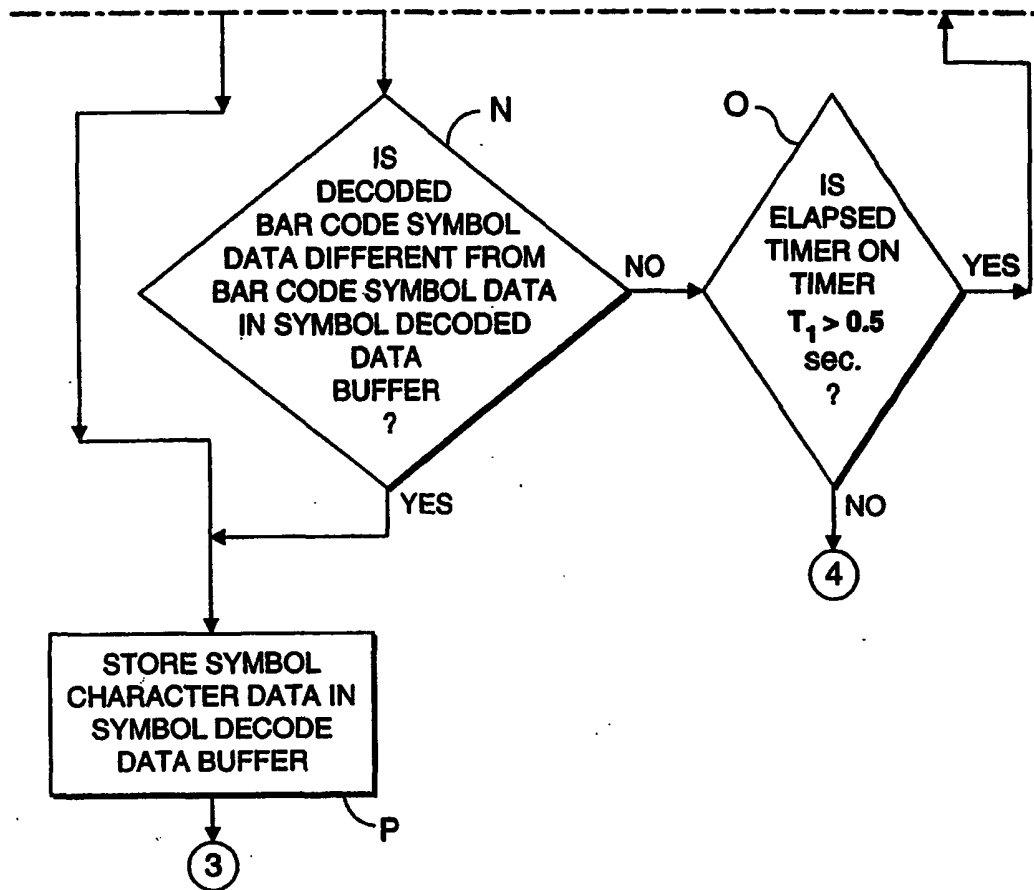


FIG. 34B2

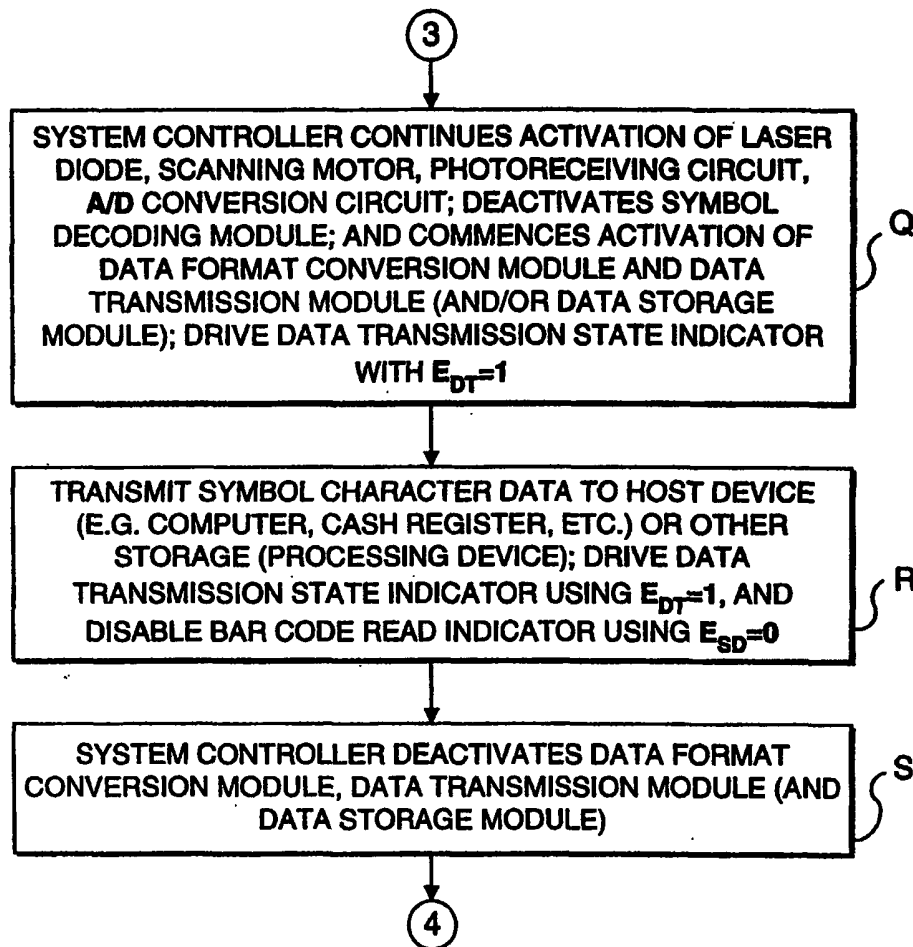


FIG. 34C

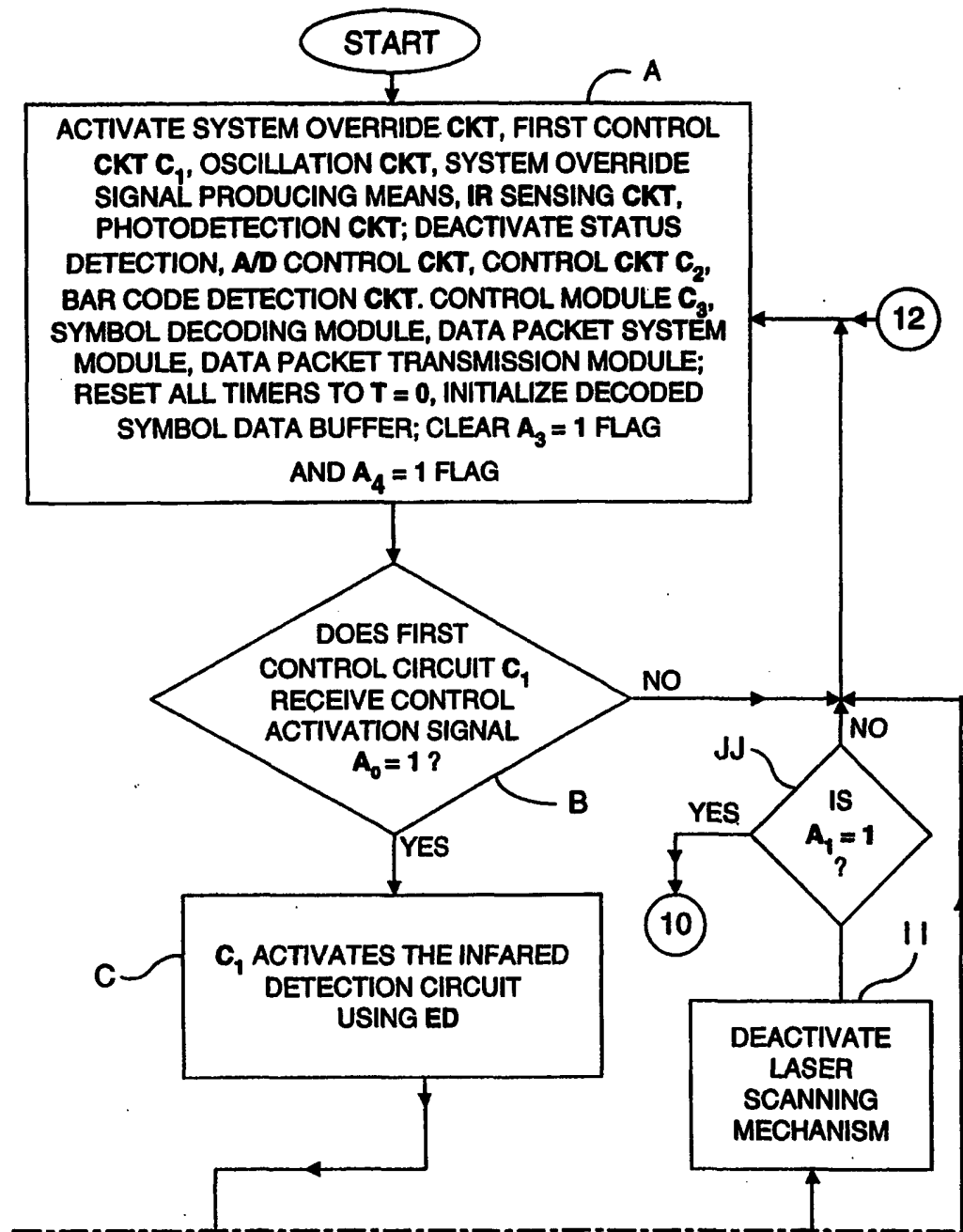


FIG. 35A1

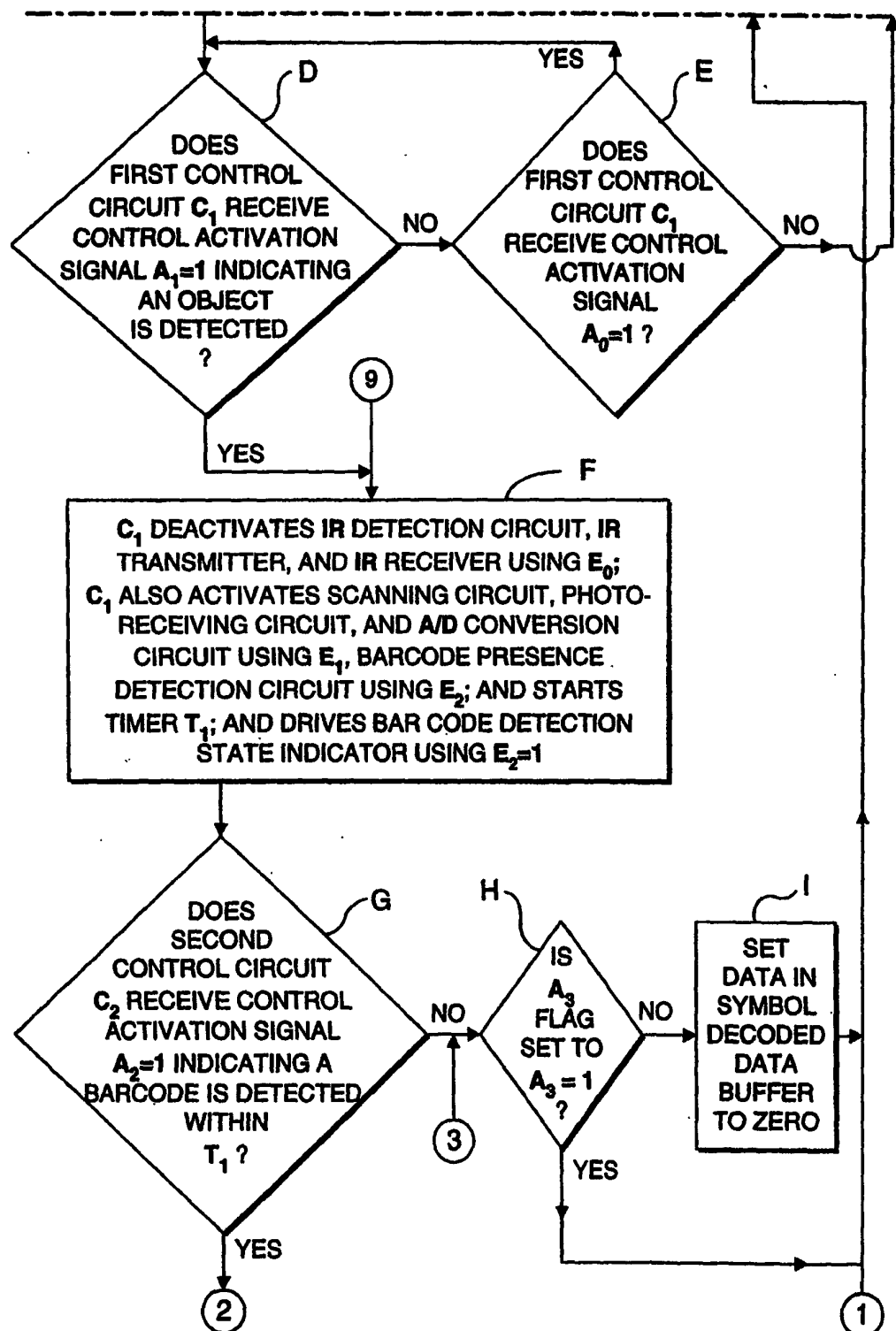


FIG. 35A2

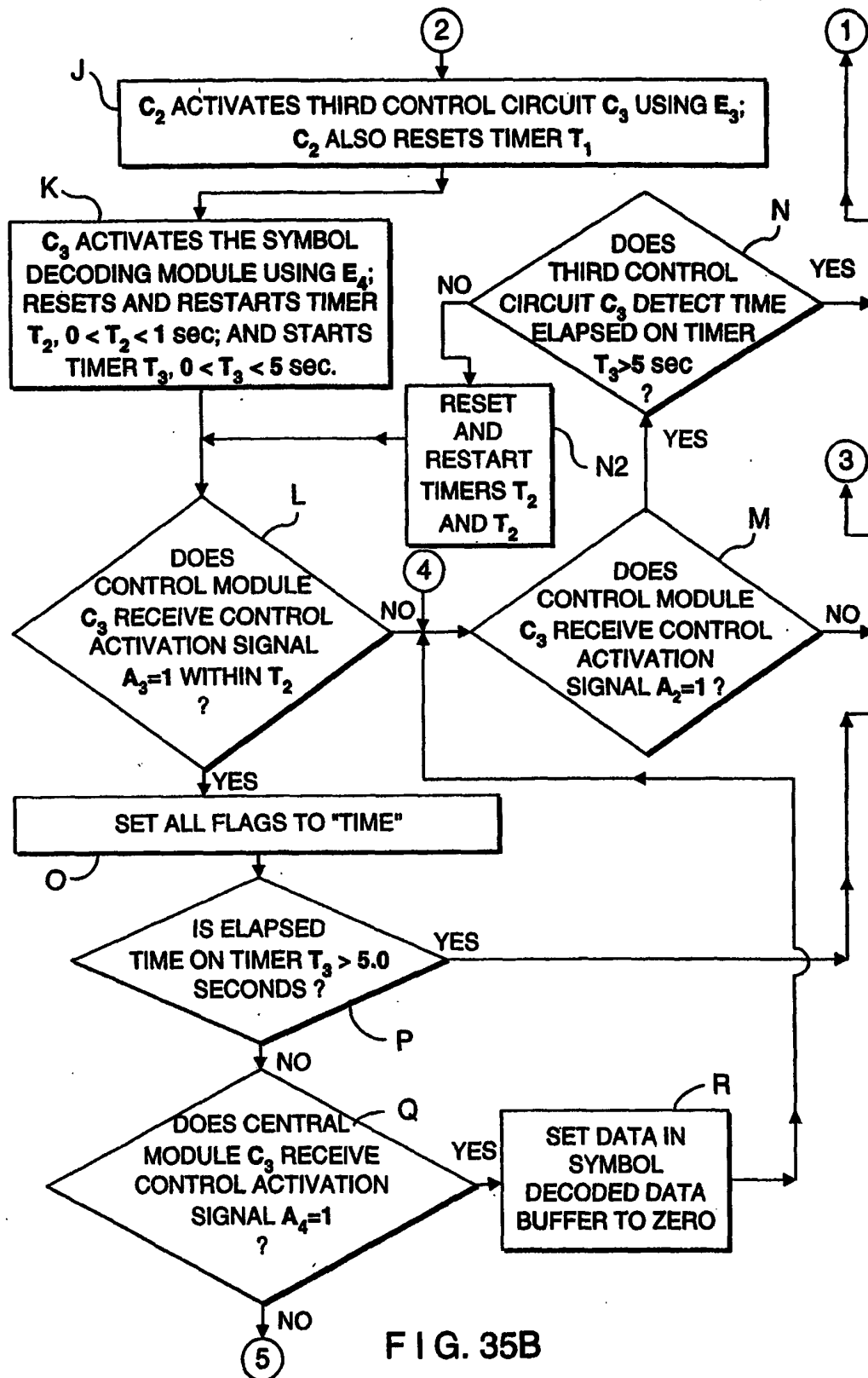


FIG. 35B

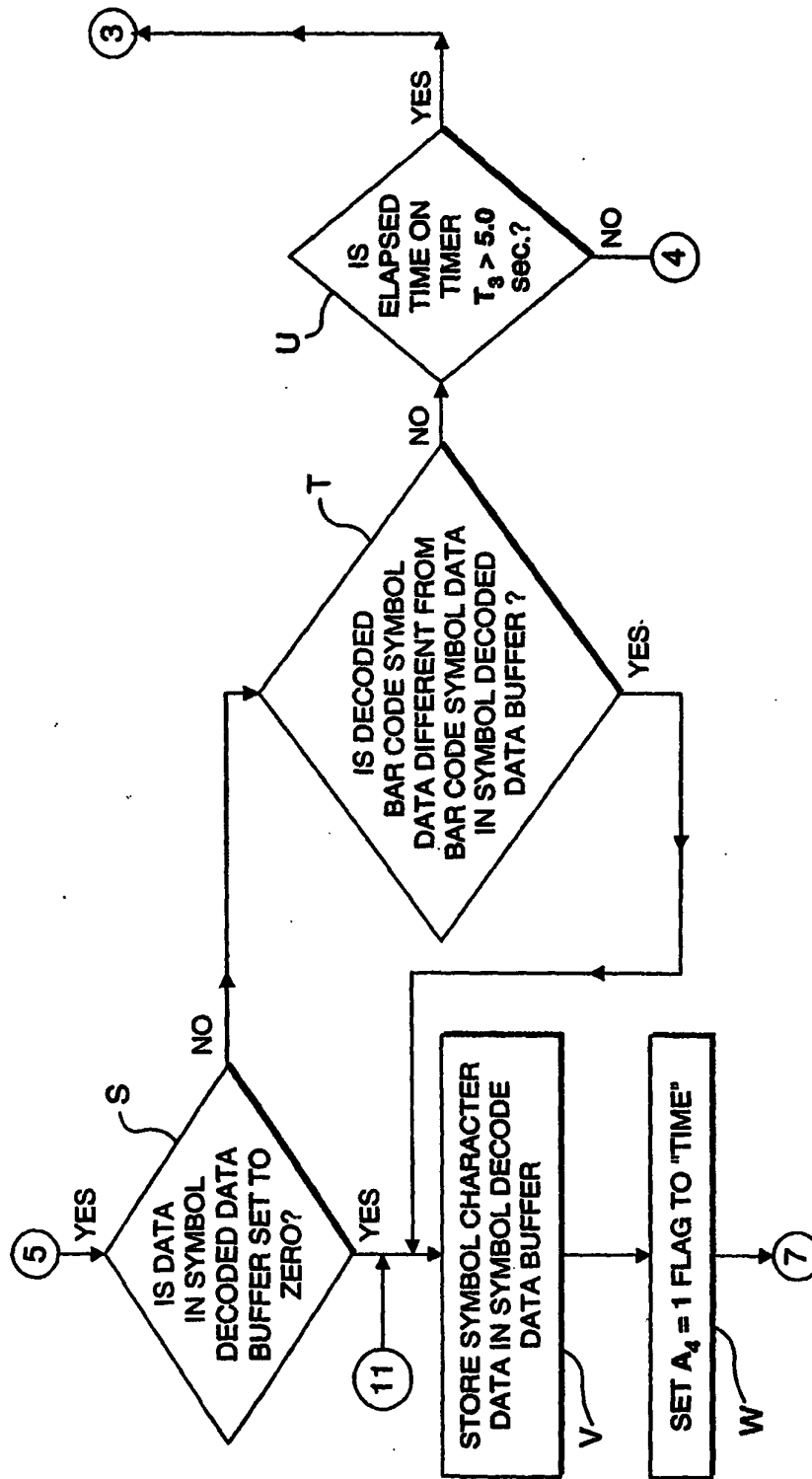


FIG. 35C

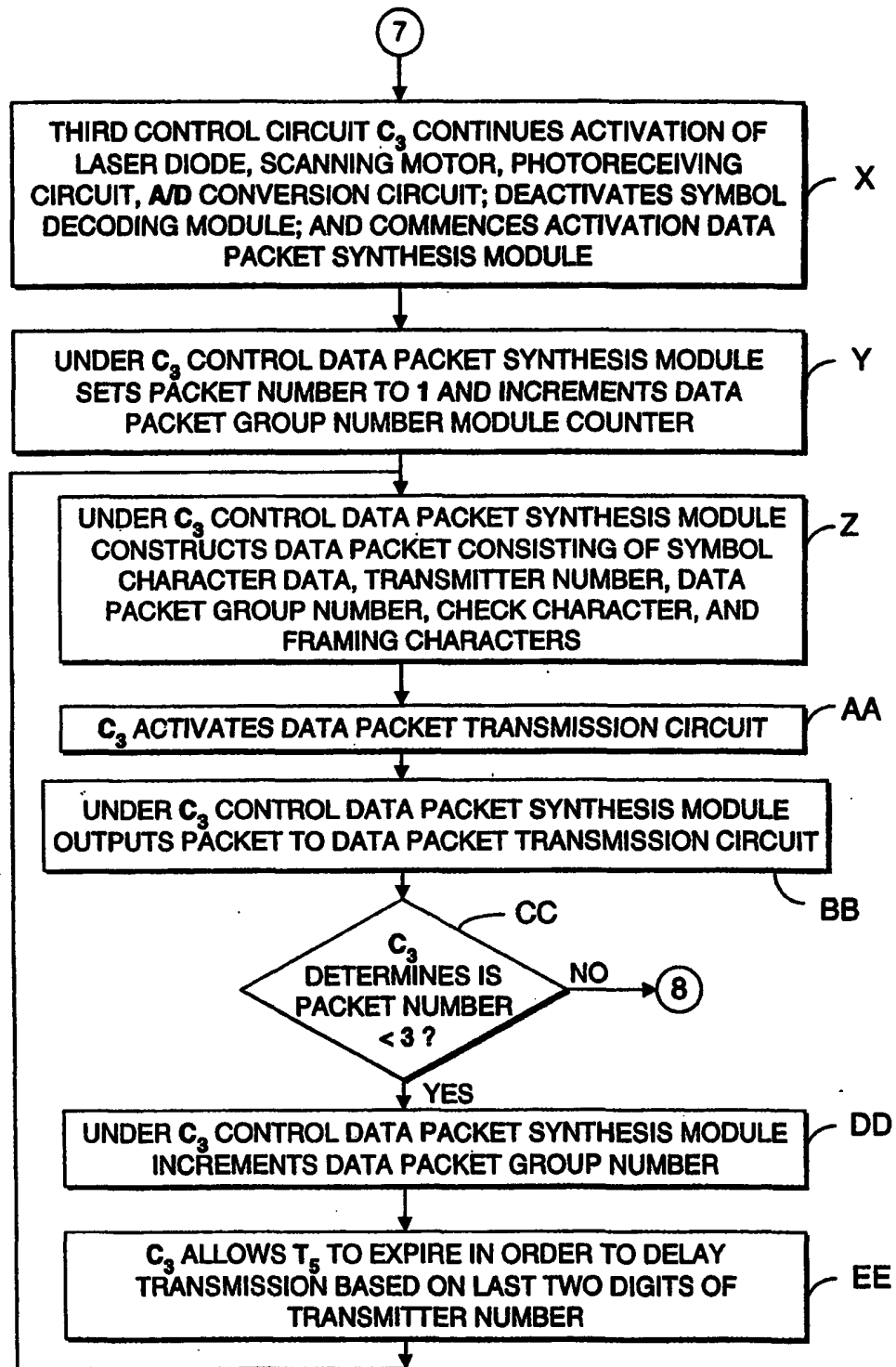


FIG. 35D

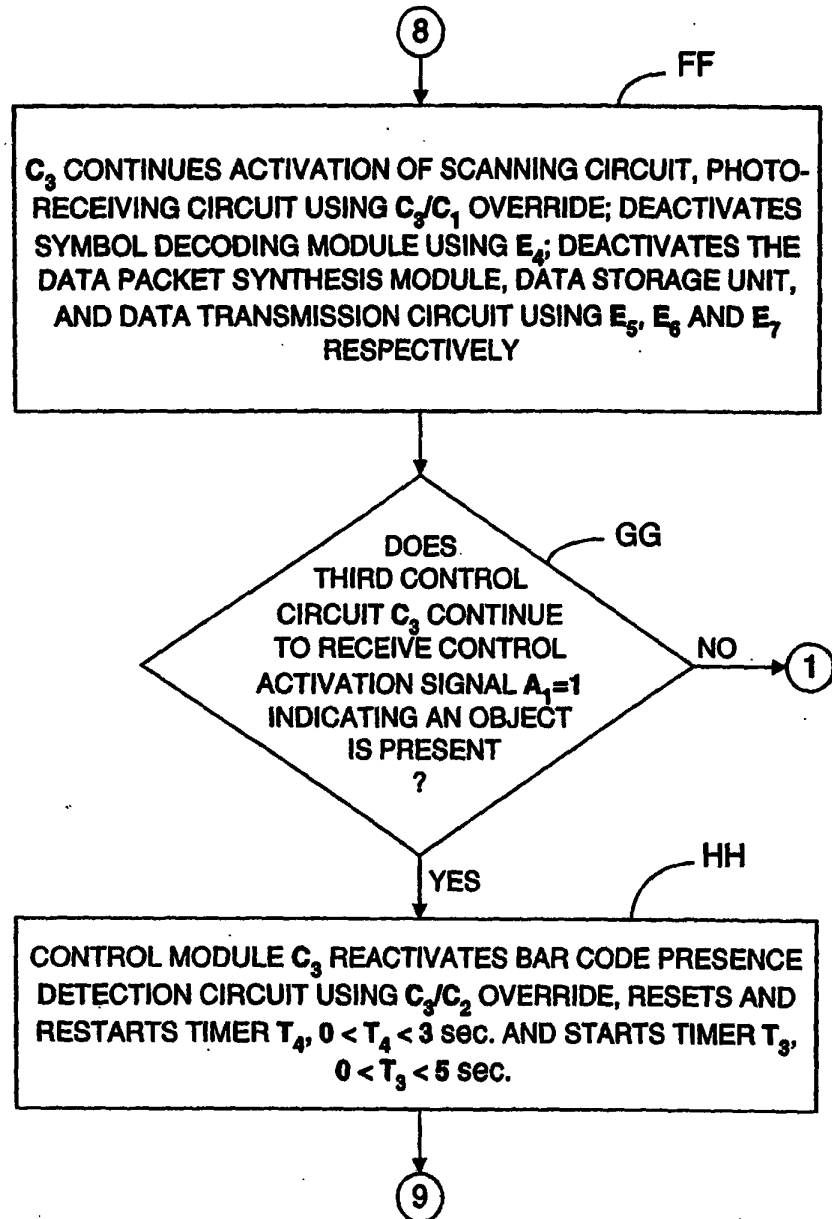


FIG. 35E

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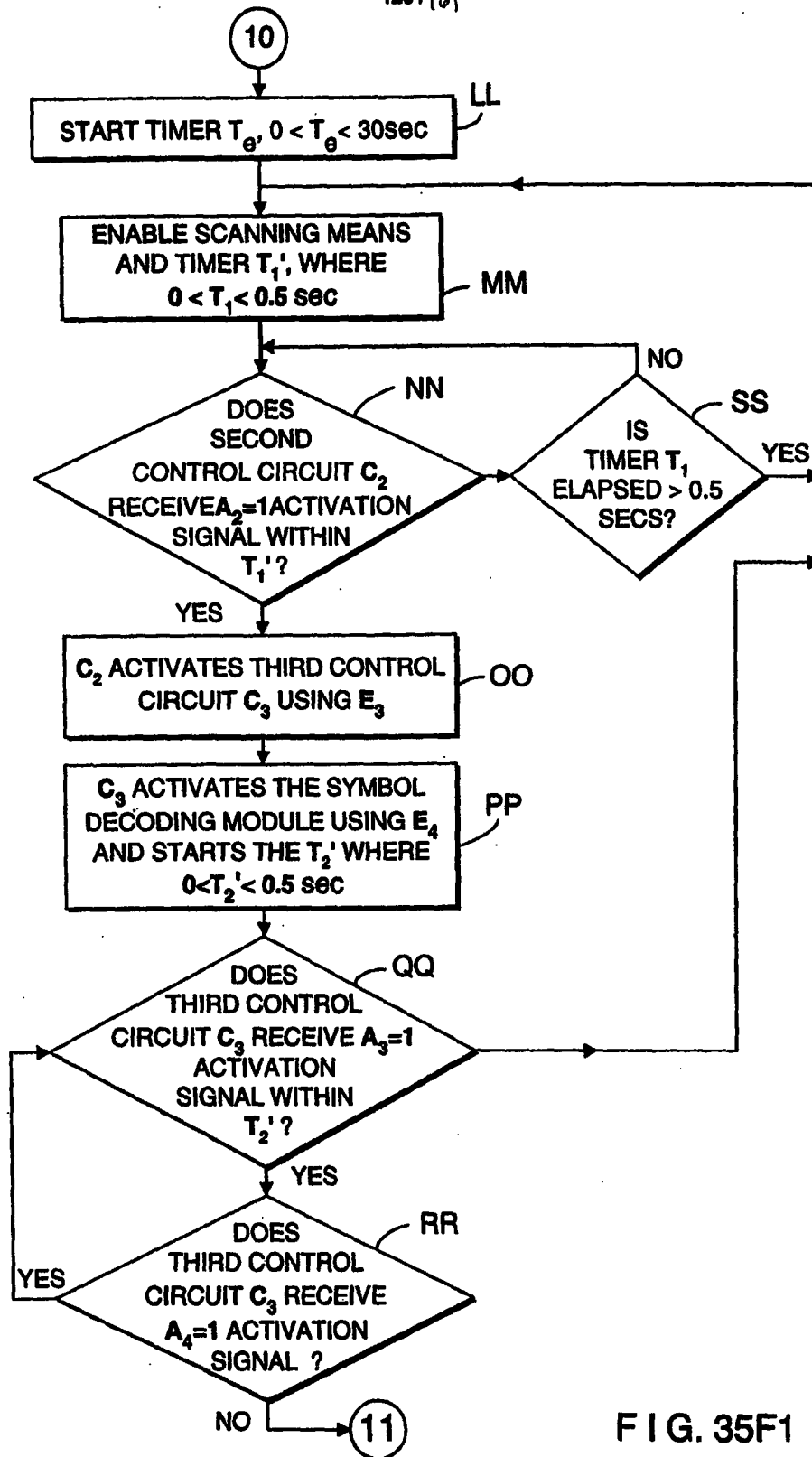
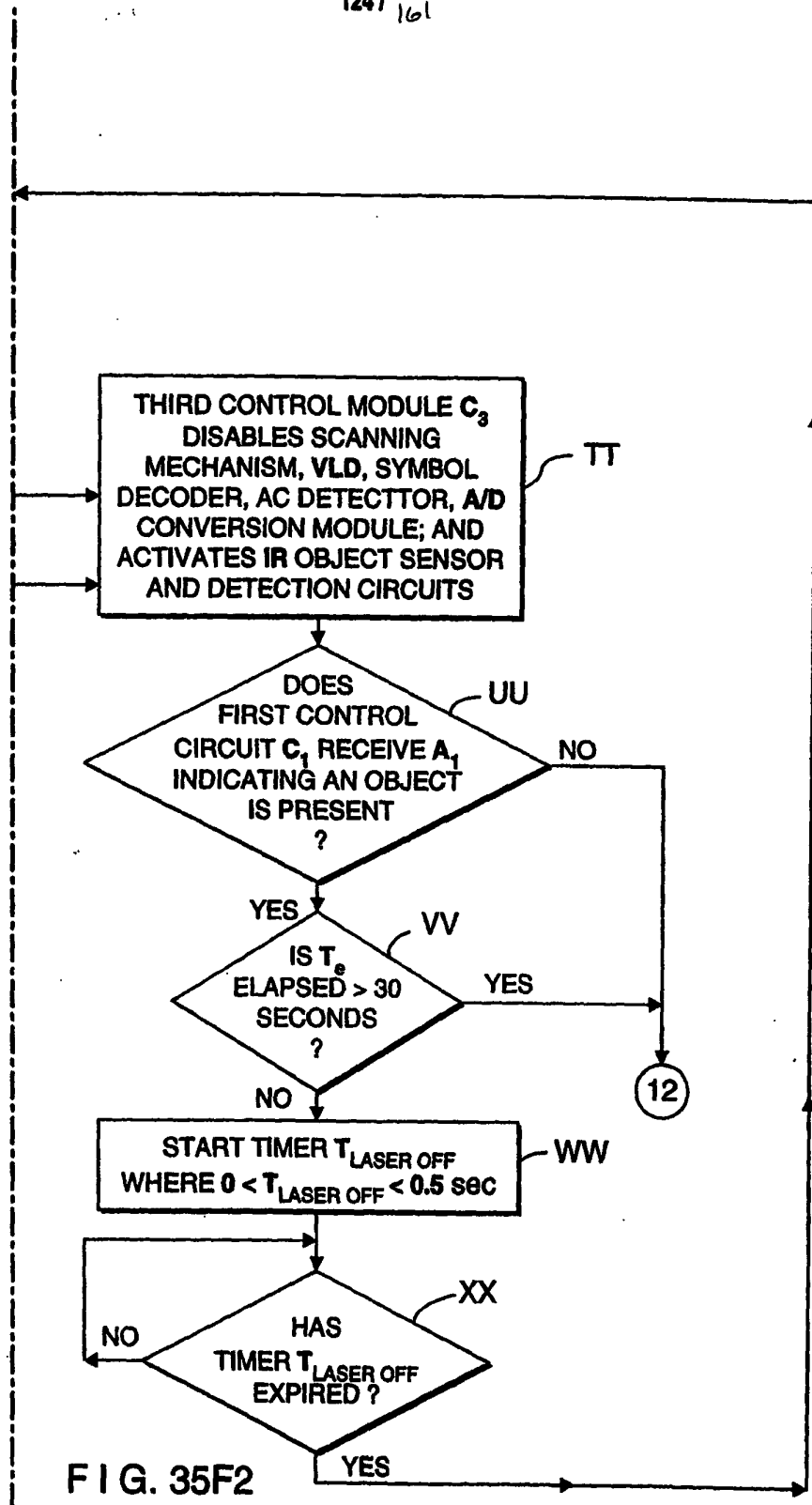


FIG. 35F1



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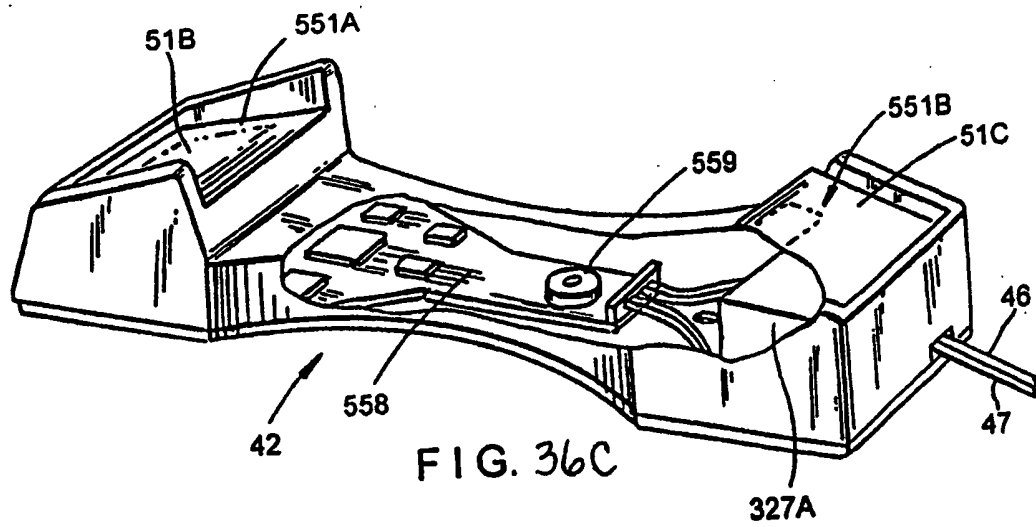
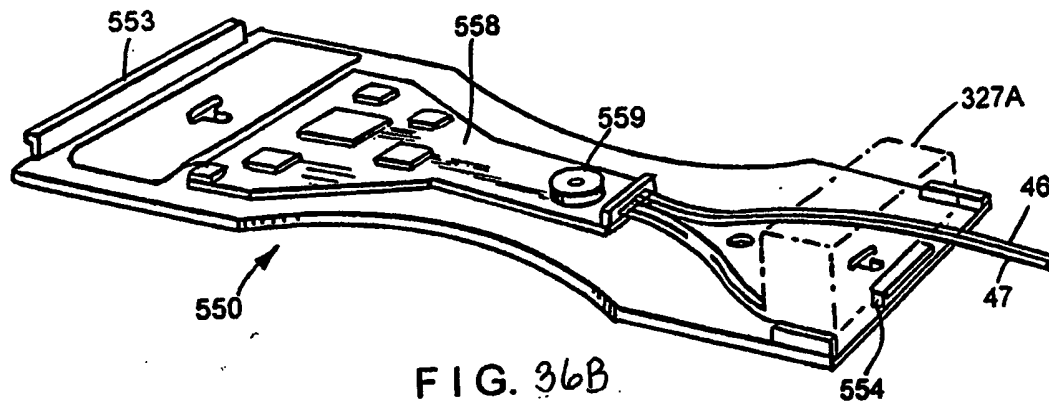
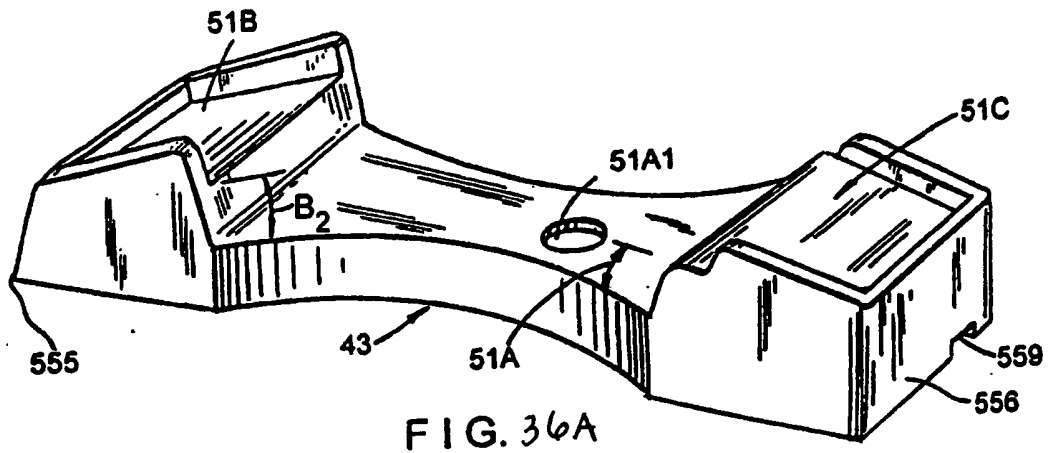
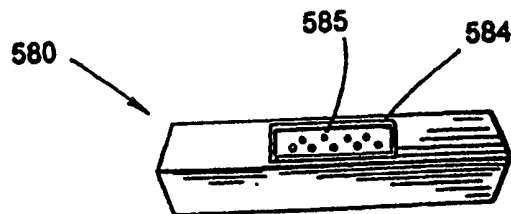
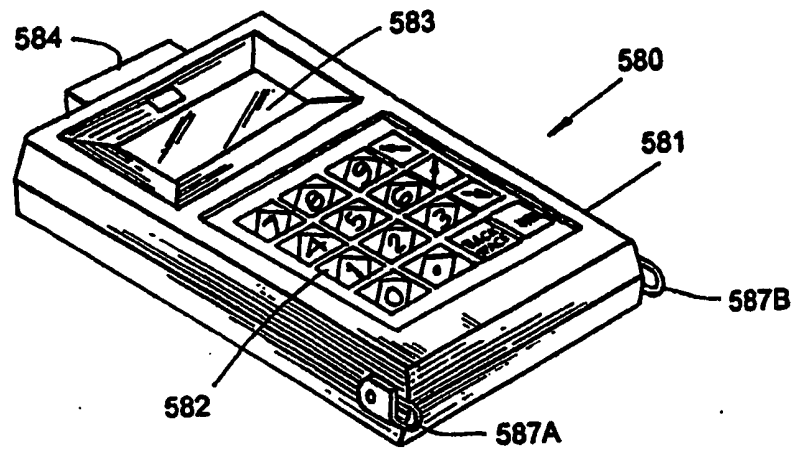




FIG. 37

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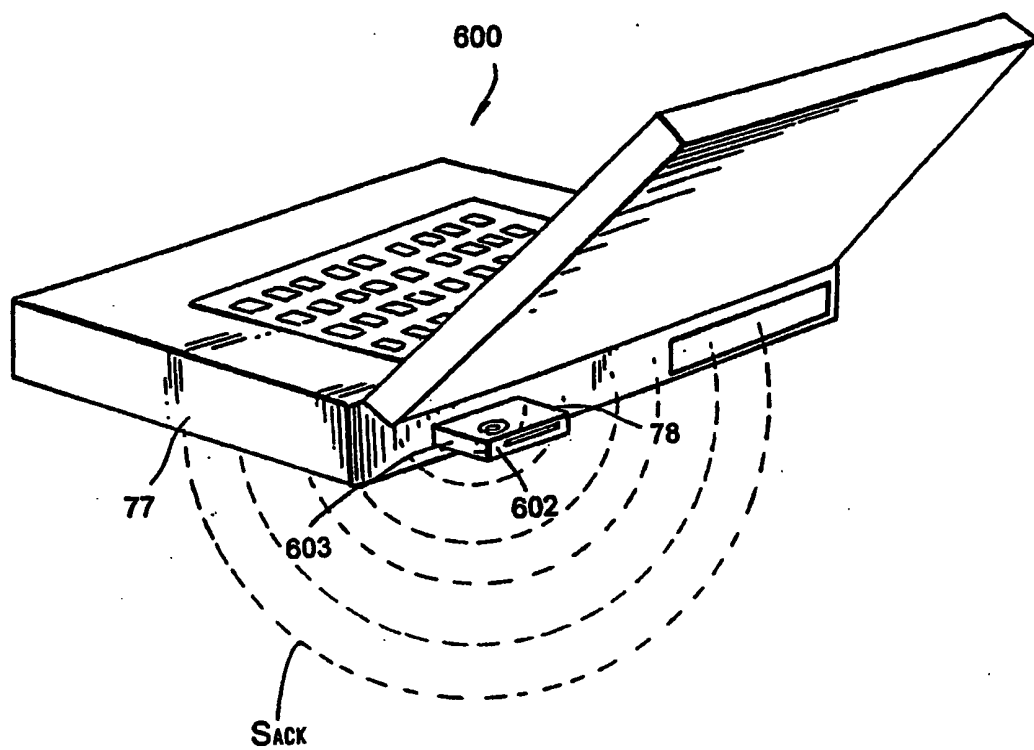
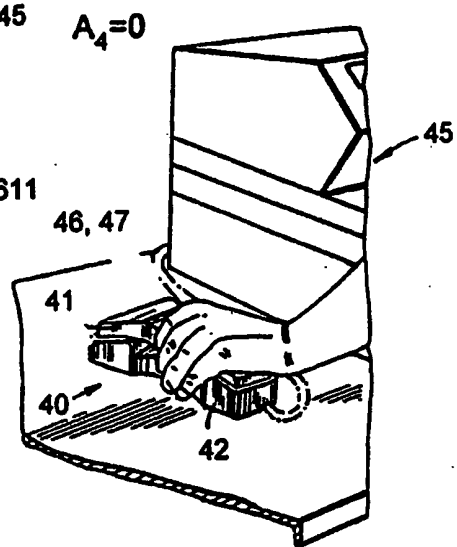
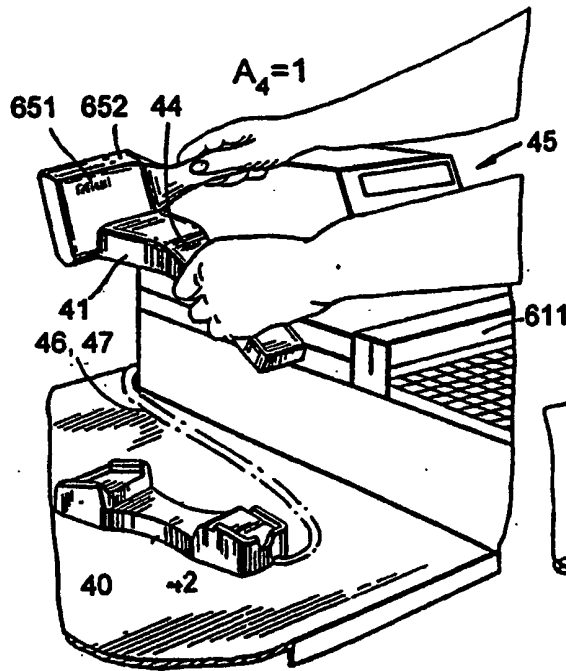
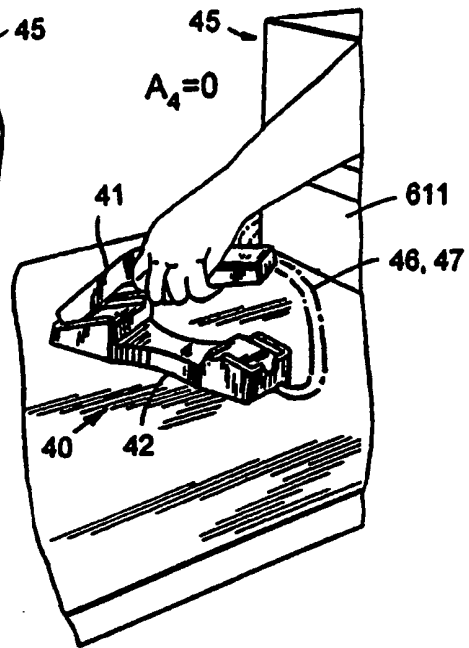
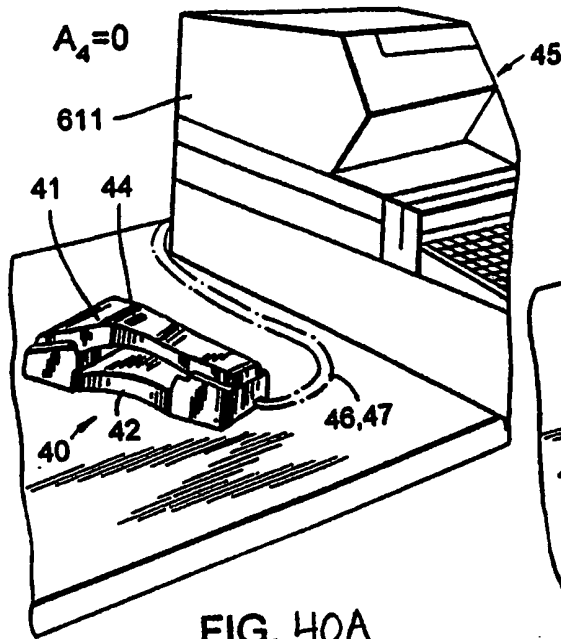


FIG. 39

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$A_4=1$

$A_4=0$

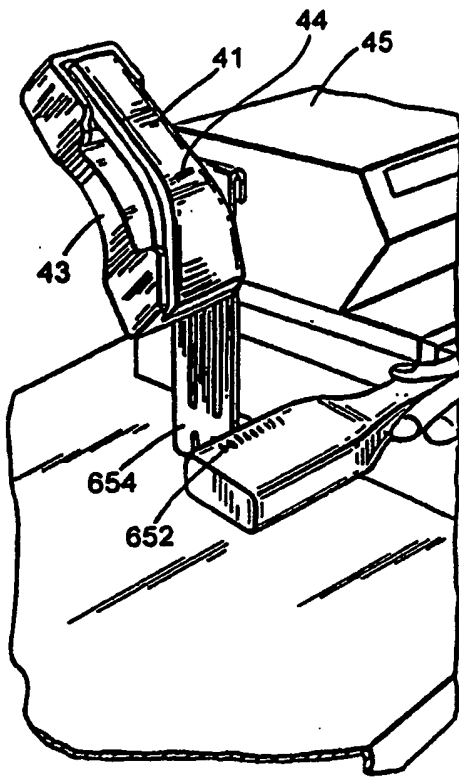


FIG. 41A

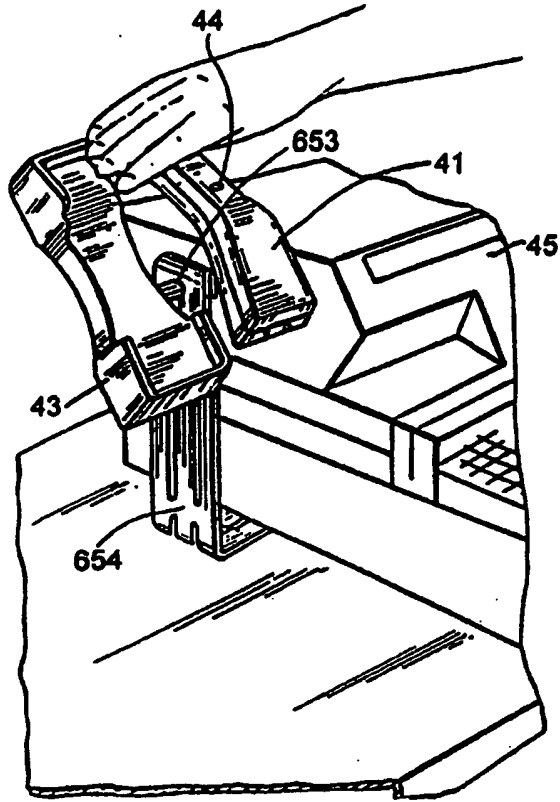


FIG. 41B

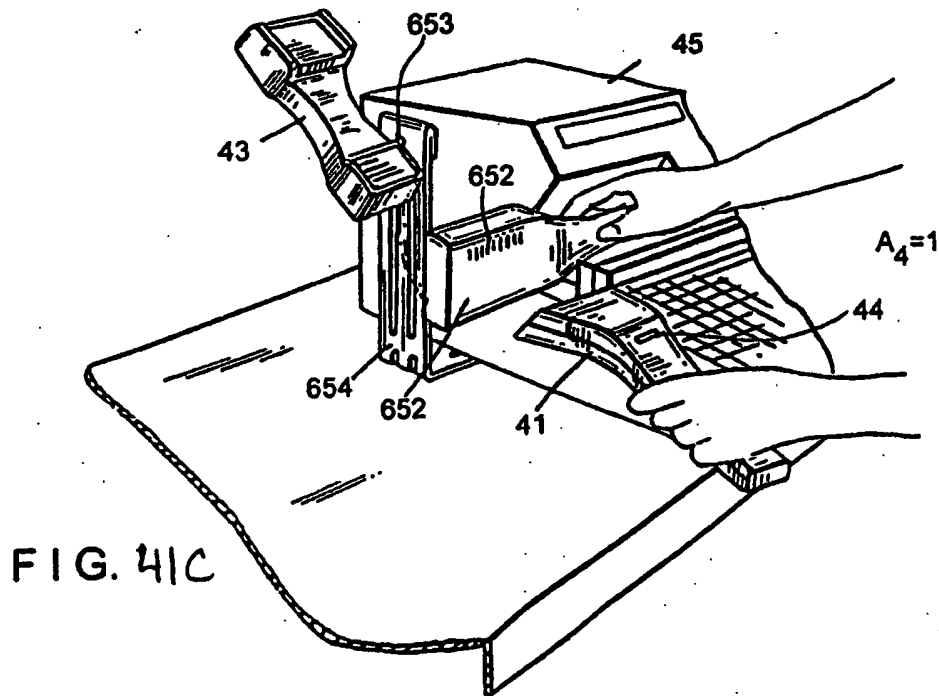


FIG. 41C

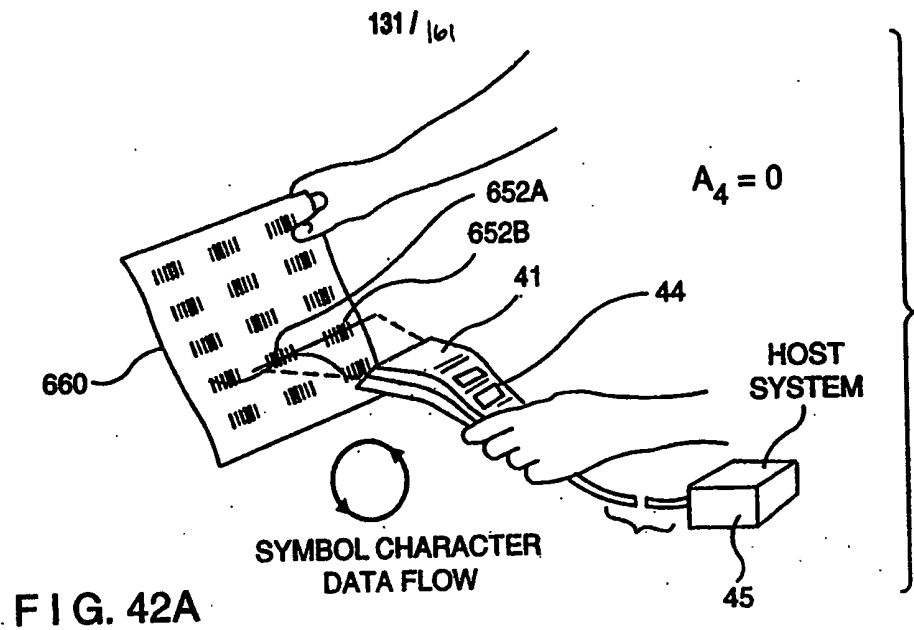


FIG. 42A

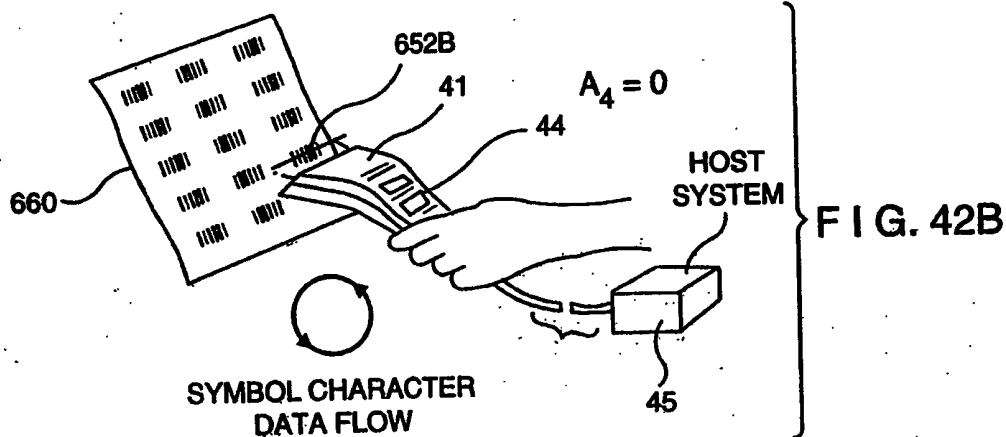


FIG. 42B

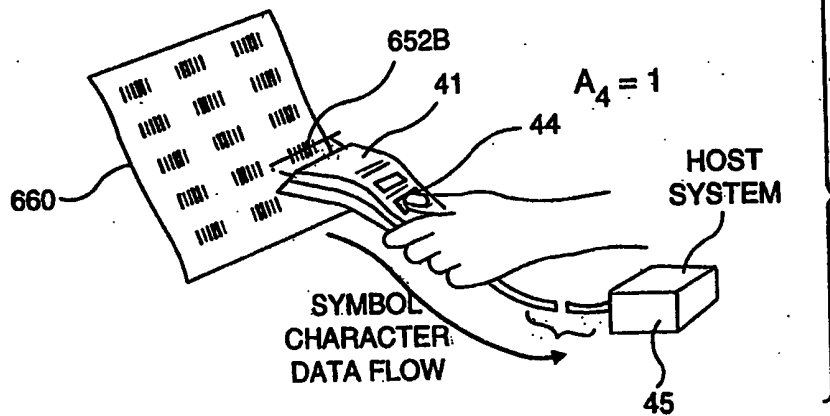
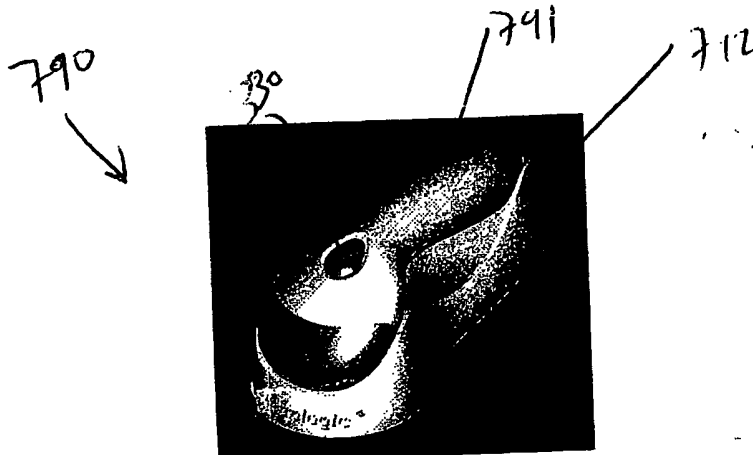


FIG. 42C

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Automatic Barcode
Reading
System with
2-WAY
RF Communication
Link

FIG. 43A



FIG. 43B

FIG. 43C

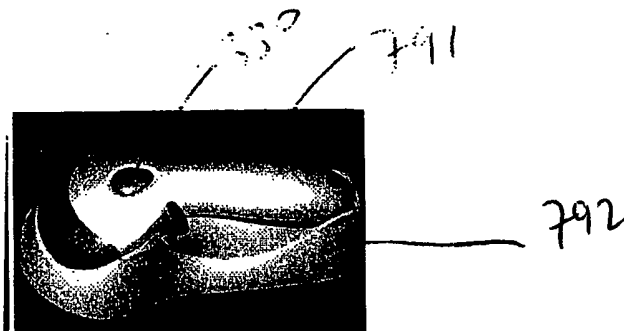


FIG. 43D

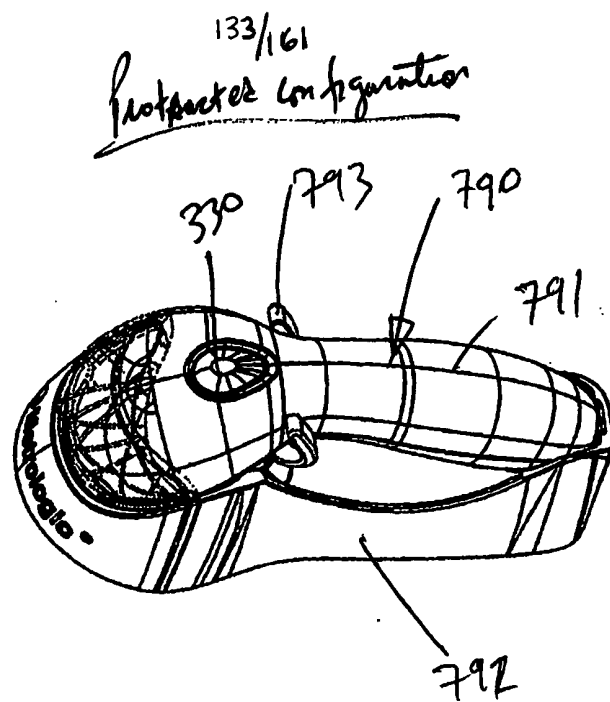


FIG. 43 F

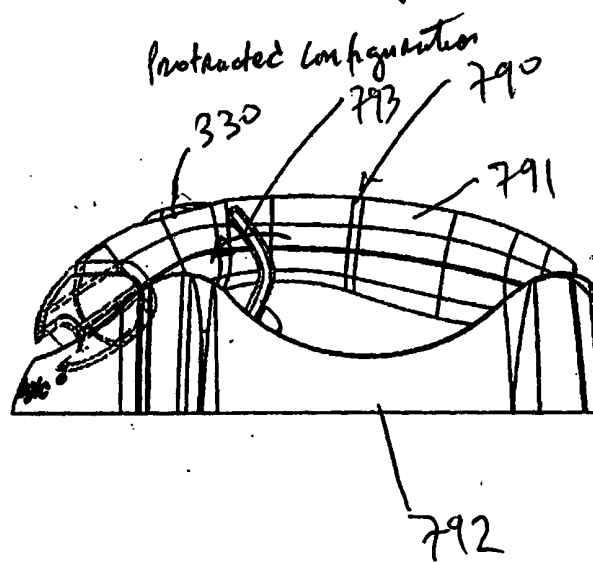


FIG. 43 E

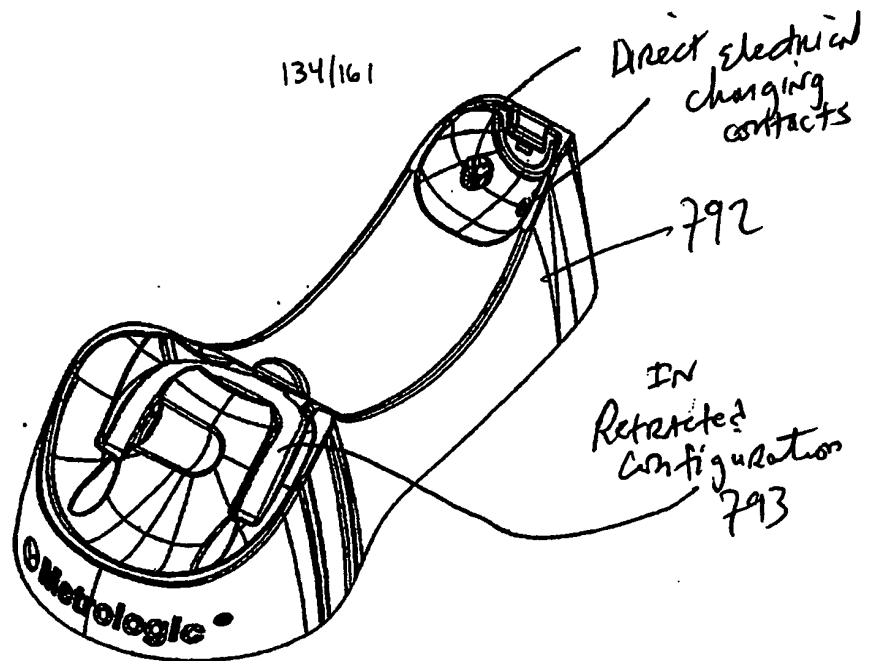


FIG. 43G

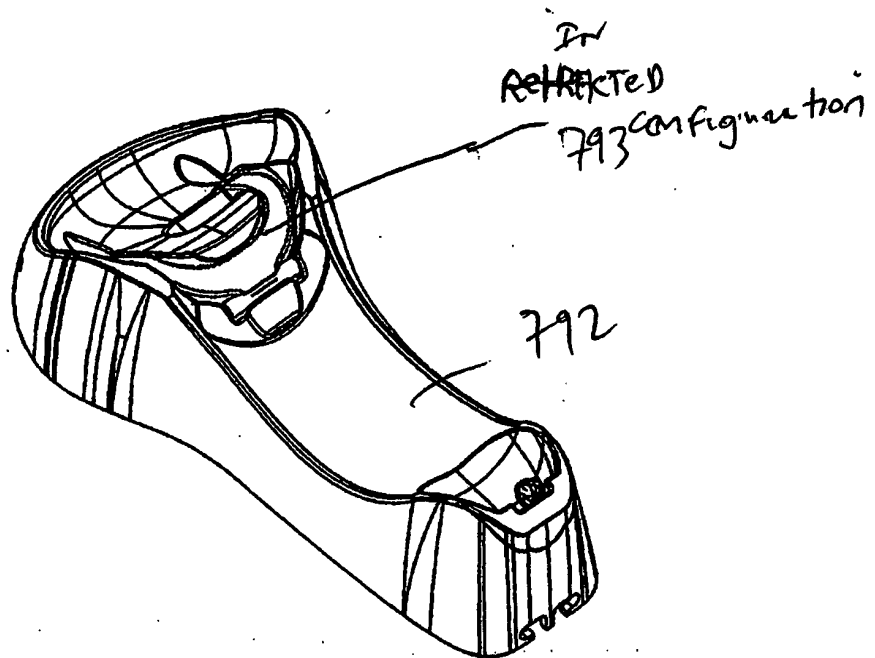


FIG. 43H

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Retracted Configuration

793



FIG. 43I

792

Projected Configuration

793

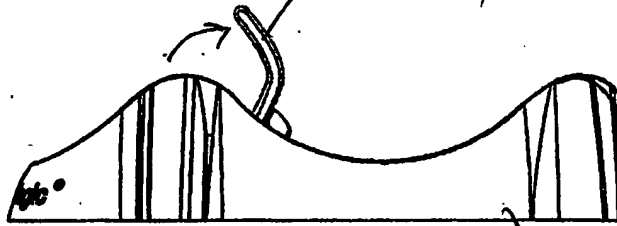


FIG. 43J

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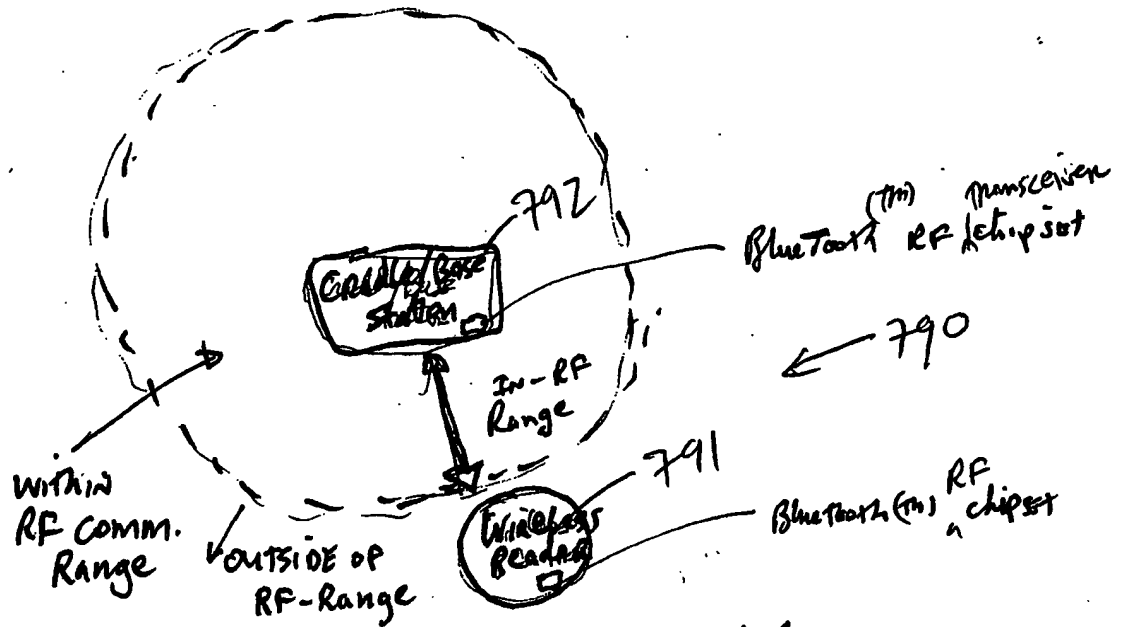


FIG. 44A1

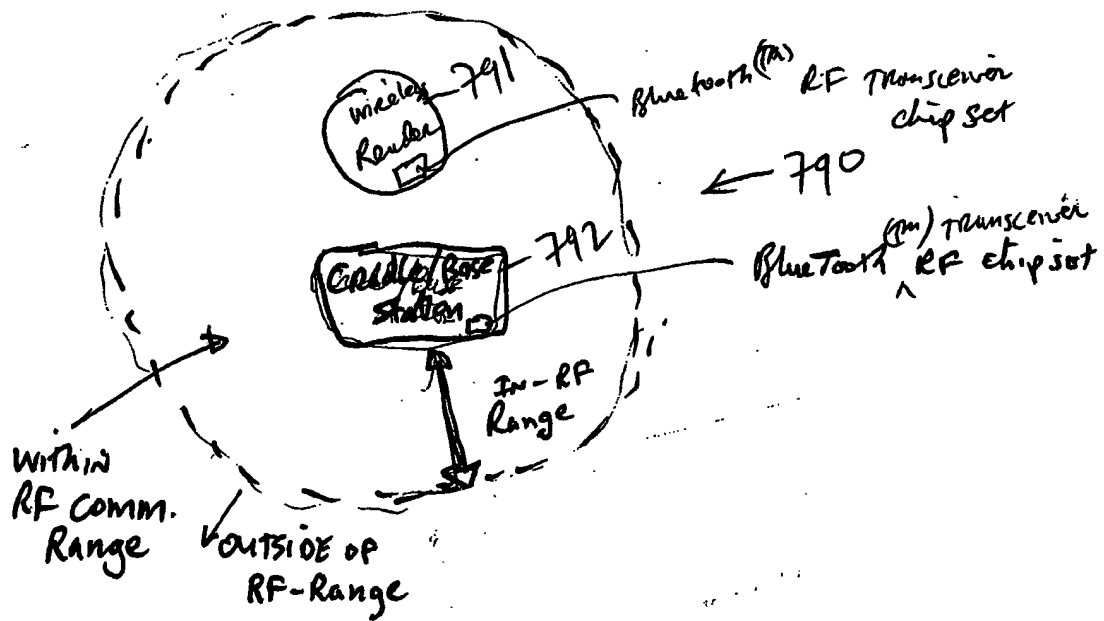


FIG. 44A2

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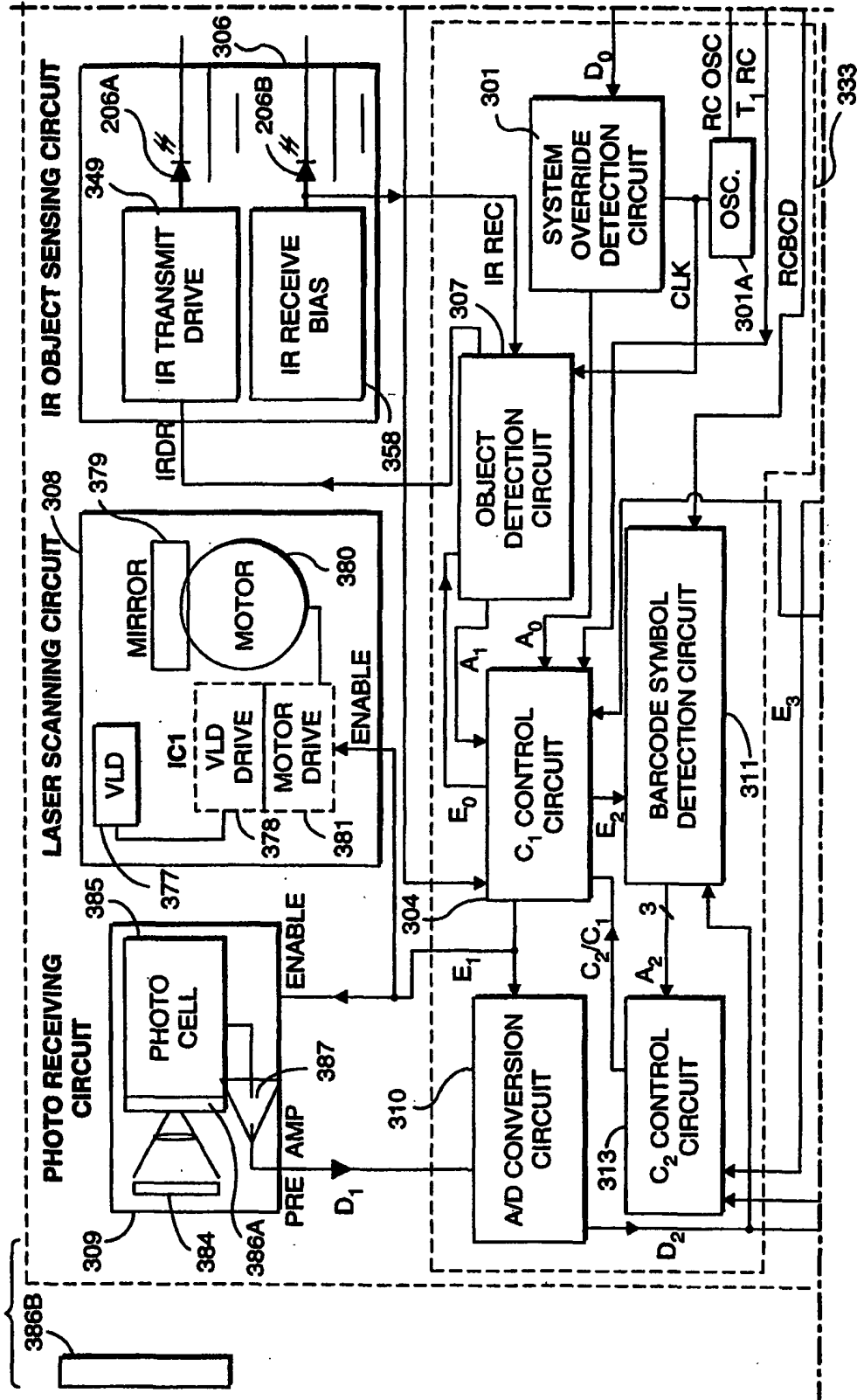
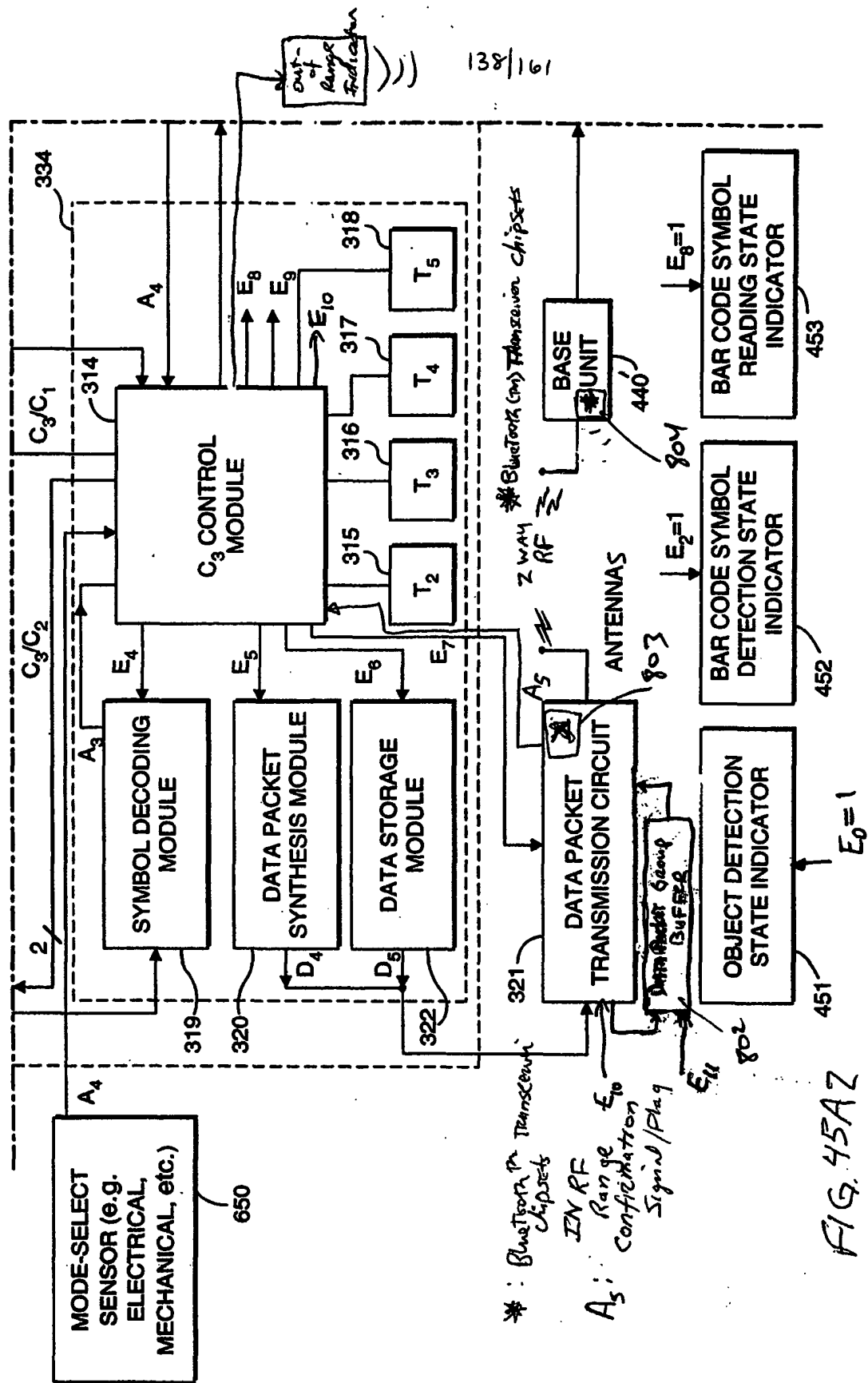
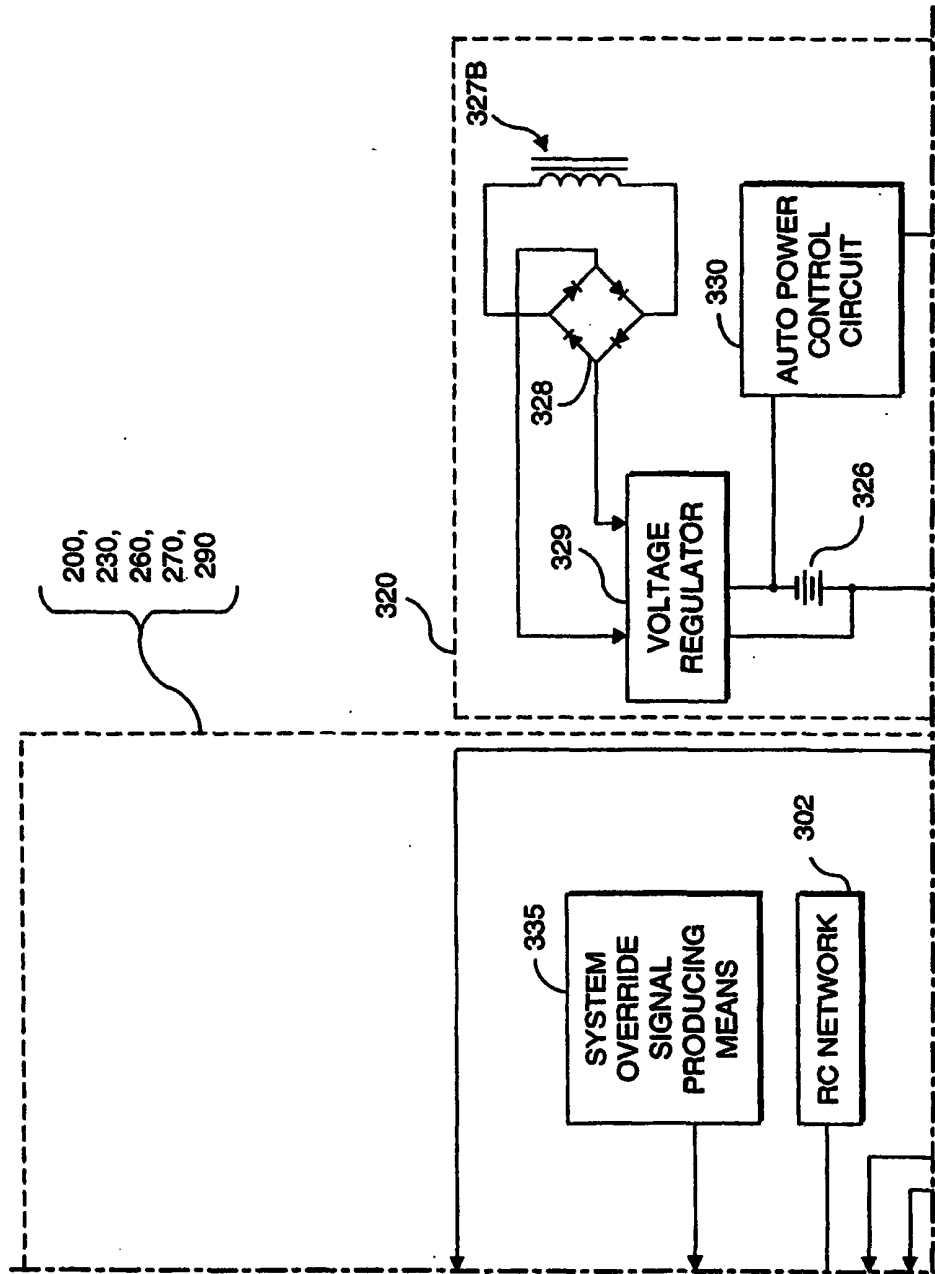


FIG 45A1

790





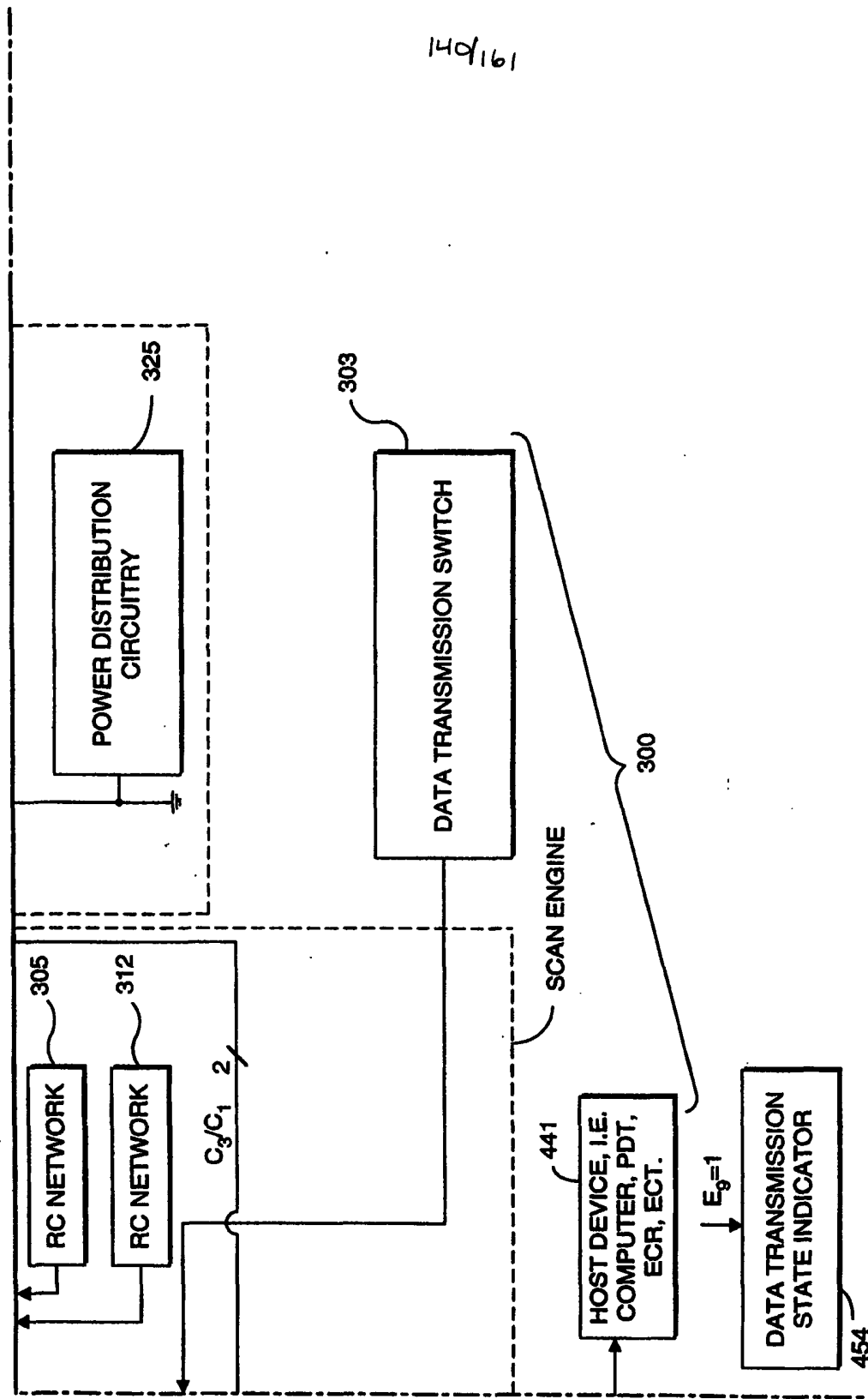


FIG. 45A4

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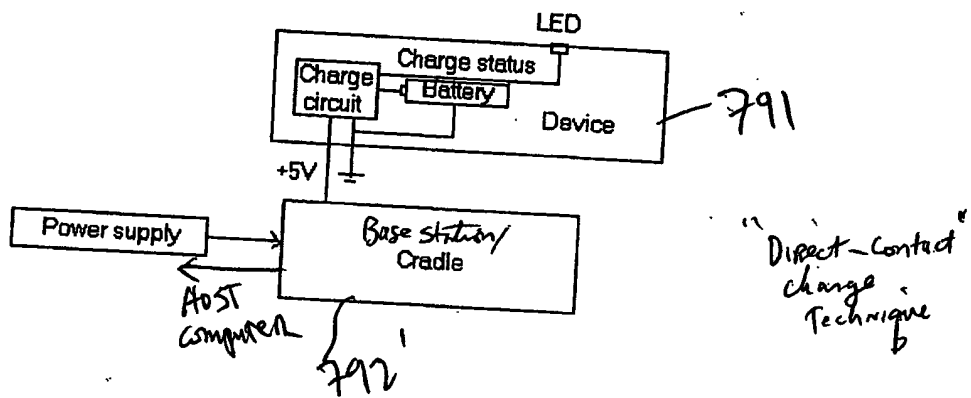


FIG. 45B

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DATA Packet
Transmission VIA
2-WAY R/P WITH Automatic
R/P-Range Dependent
Control

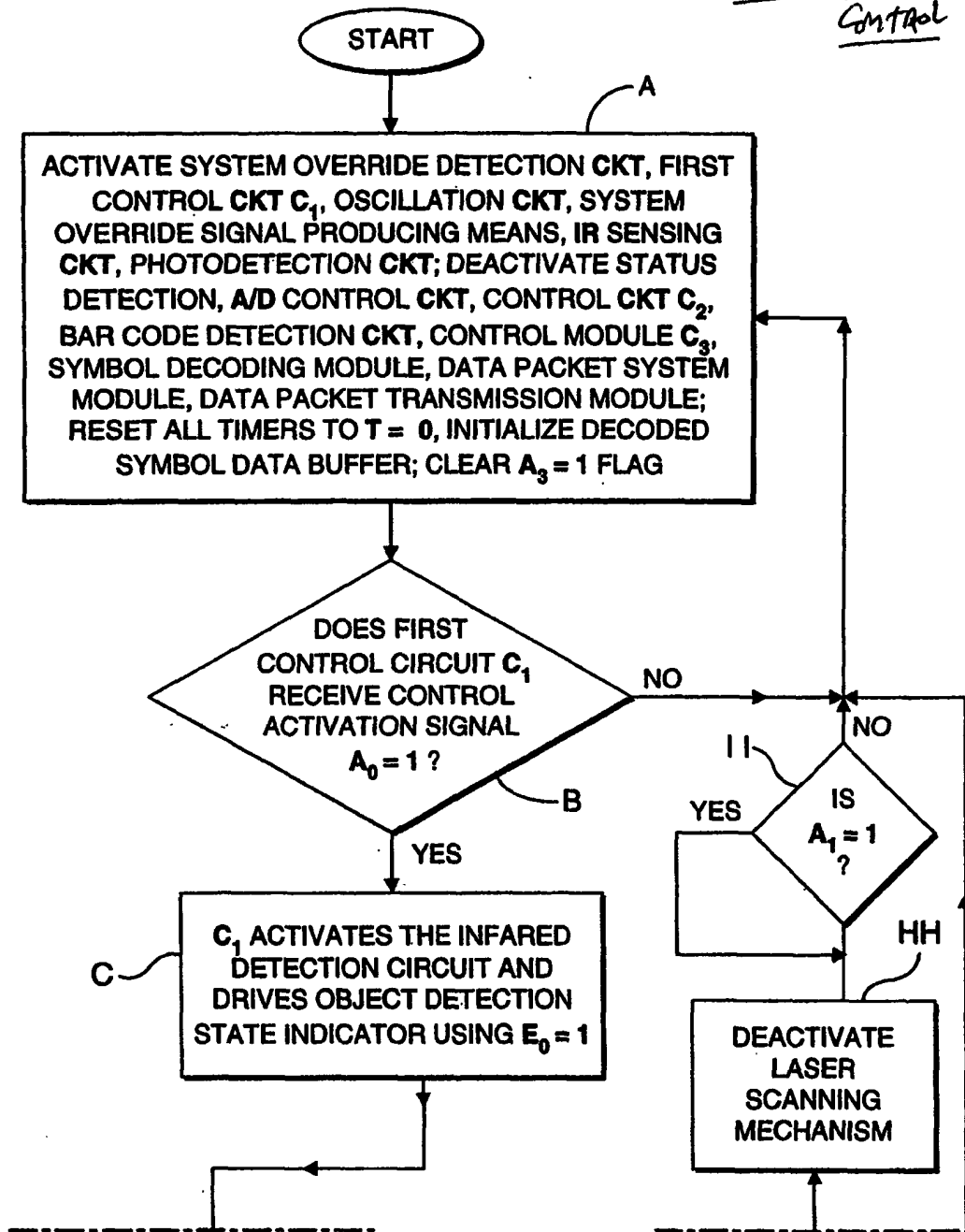
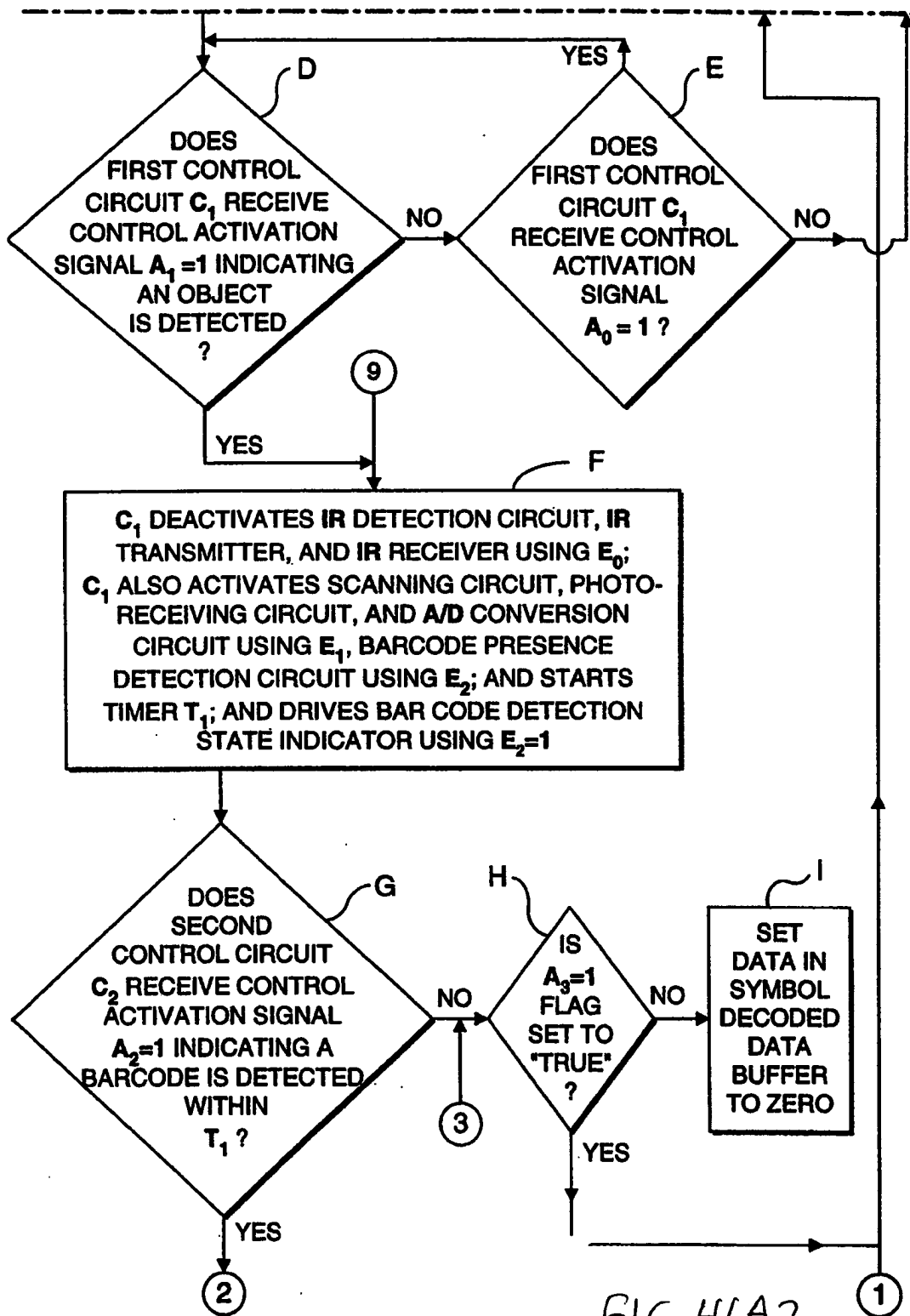
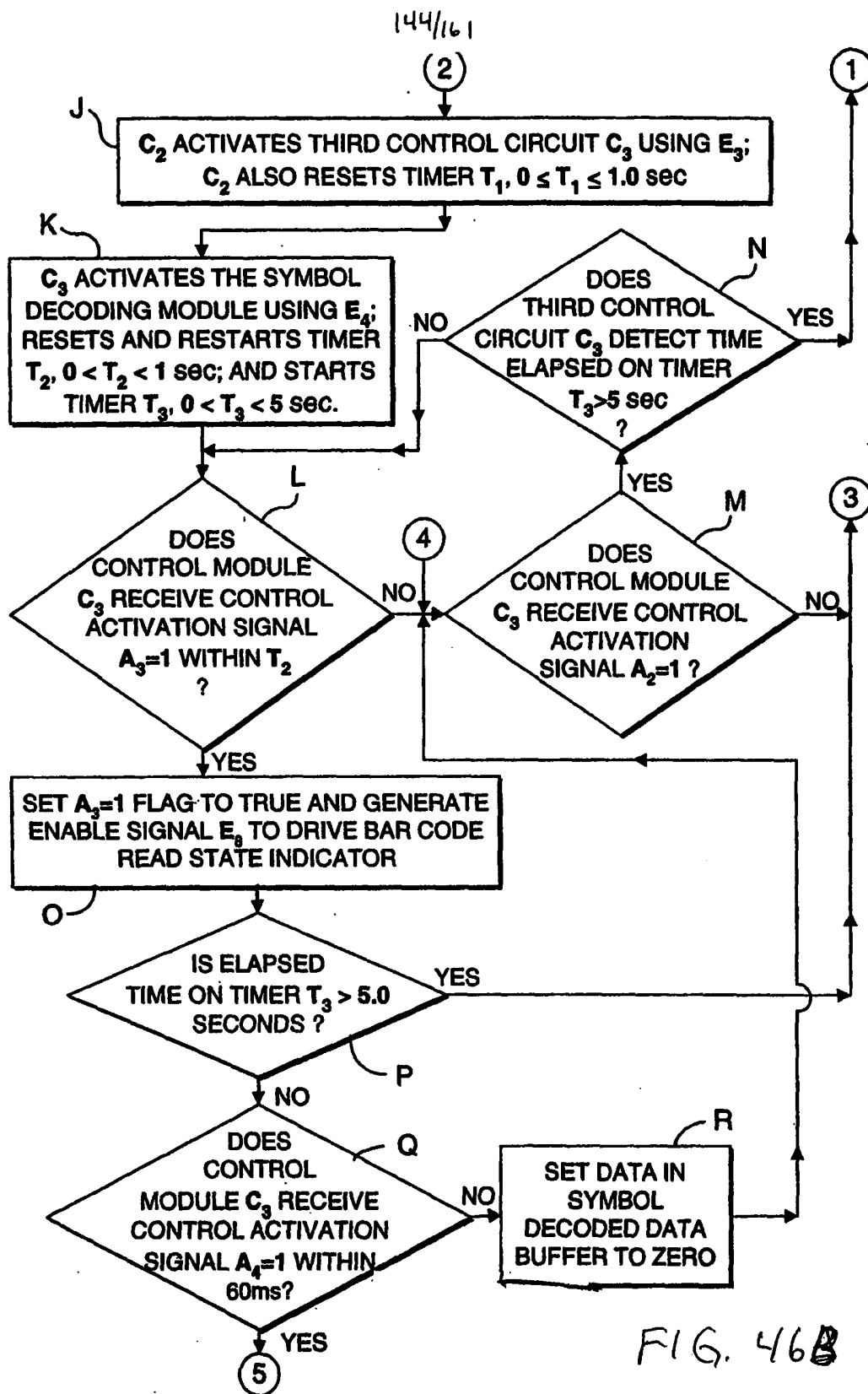


FIG. 46A1





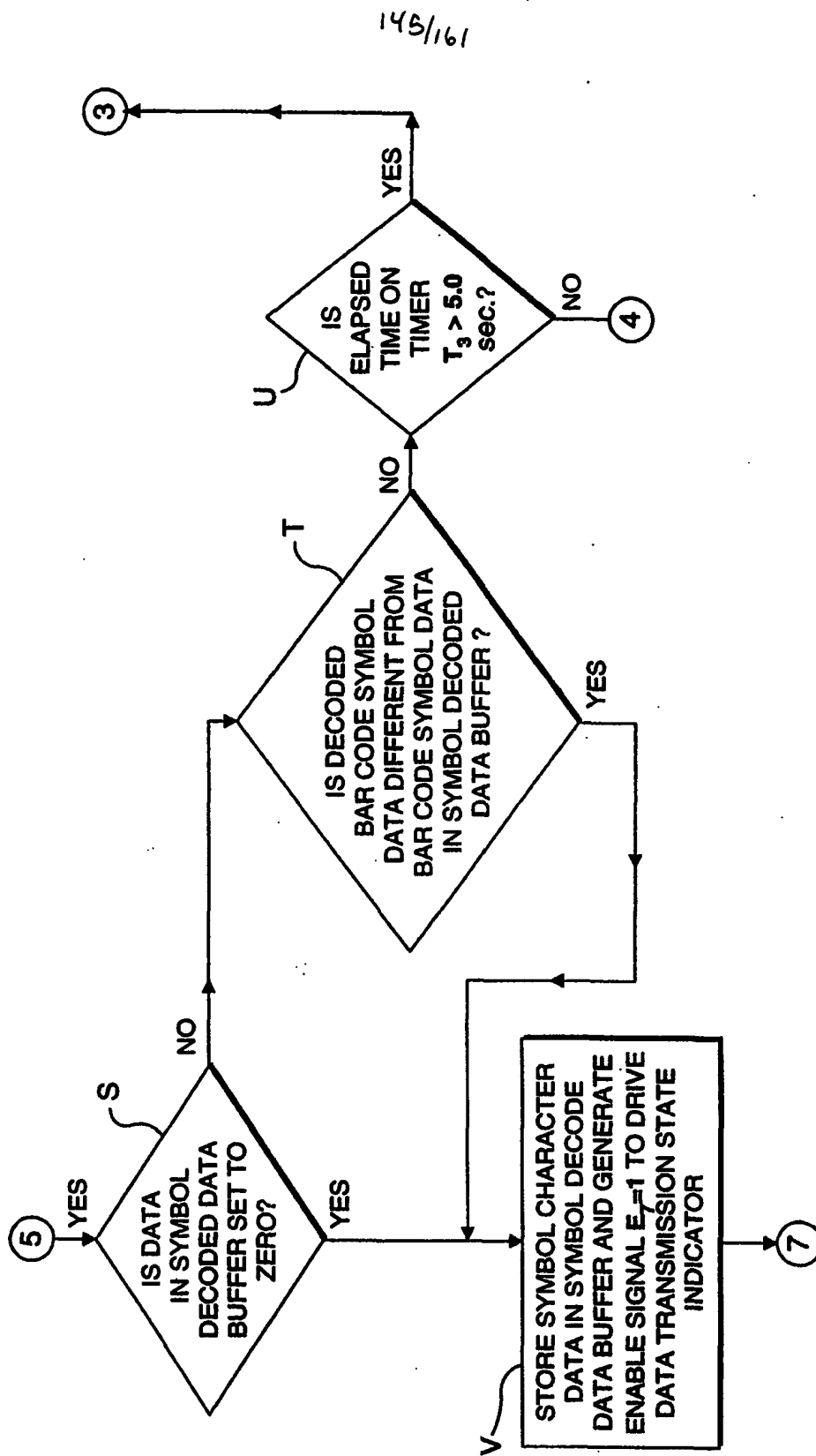


FIG 46C1

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7

THIRD CONTROL CIRCUIT C_3 CONTINUES ACTIVATION OF LASER DIODE, SCANNING MOTOR, PHOTORECEIVING CIRCUIT, A/D CONVERSION CIRCUIT; DEACTIVATES SYMBOL DECODING MODULE; AND COMMENCES ACTIVATION DATA PACKET SYNTHESIS MODULE

W

UNDER C_3 CONTROL, DATA PACKET SYNTHESIS MODULE CONSTRUCTS DATA PACKET CONSISTING OF SYMBOL CHARACTER DATA, TRANSMITTER NUMBER, DATA PACKET GROUP NUMBER, CHECK CHARACTER AND FRAMING CHARACTERS

X

IS IN-RF RANGE CONFIRMATION Signal $A_5=1$?

NO

YES

NO

ARE DATA PACKET Group(s) STORED IN DATA PACKET Group BUFFER?

YES

YES

C_3 Control Module Generates Enable Signal $E_{11}=1$ Reloading Buffered Data Packet Group(s) into Data Packet Transmission Circuit

AA

Control module C_3 Generates Enable Signal $E_{10}=1$ loading currently Synthesized Data Packet Group into Data Packet Transmission Circuit

BB

11

FIG. 46C2

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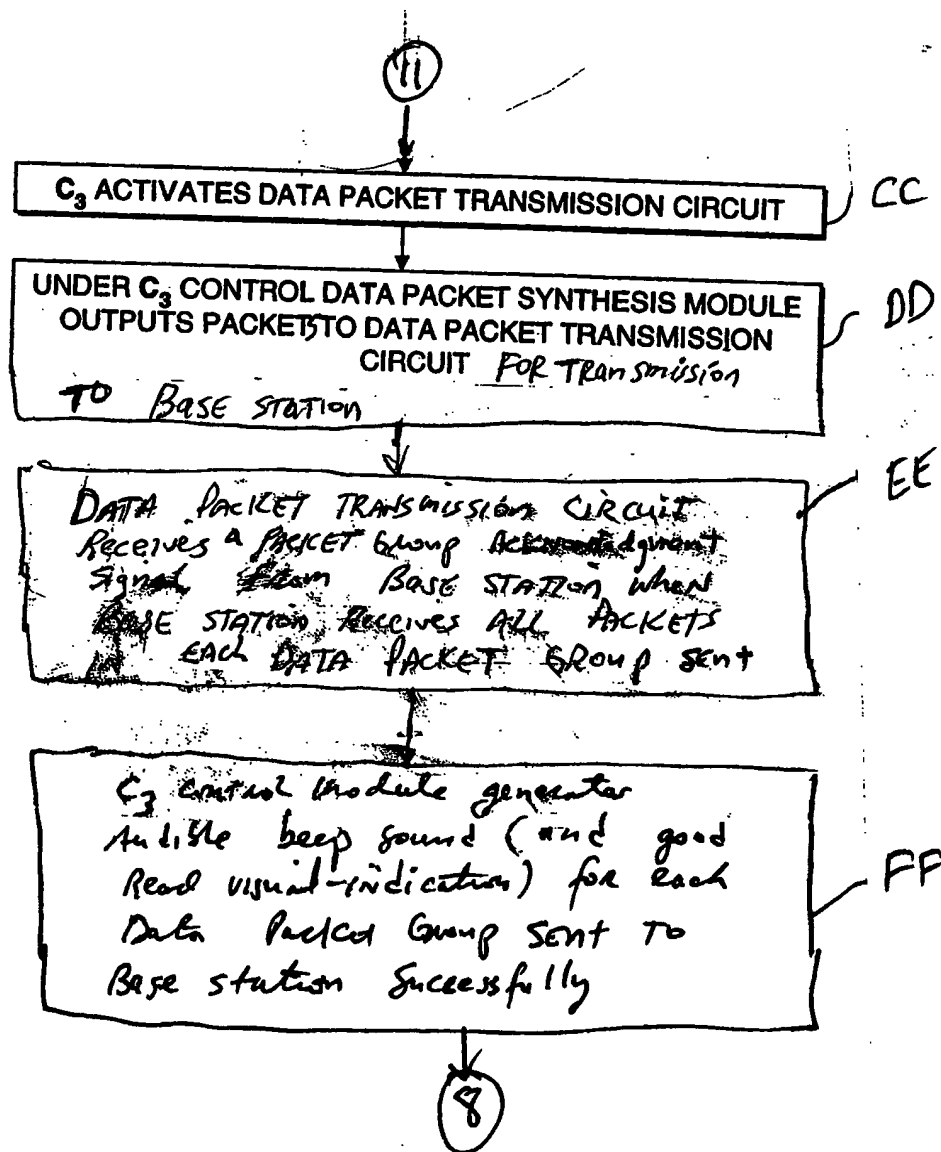


FIG. 46 C 3

GG

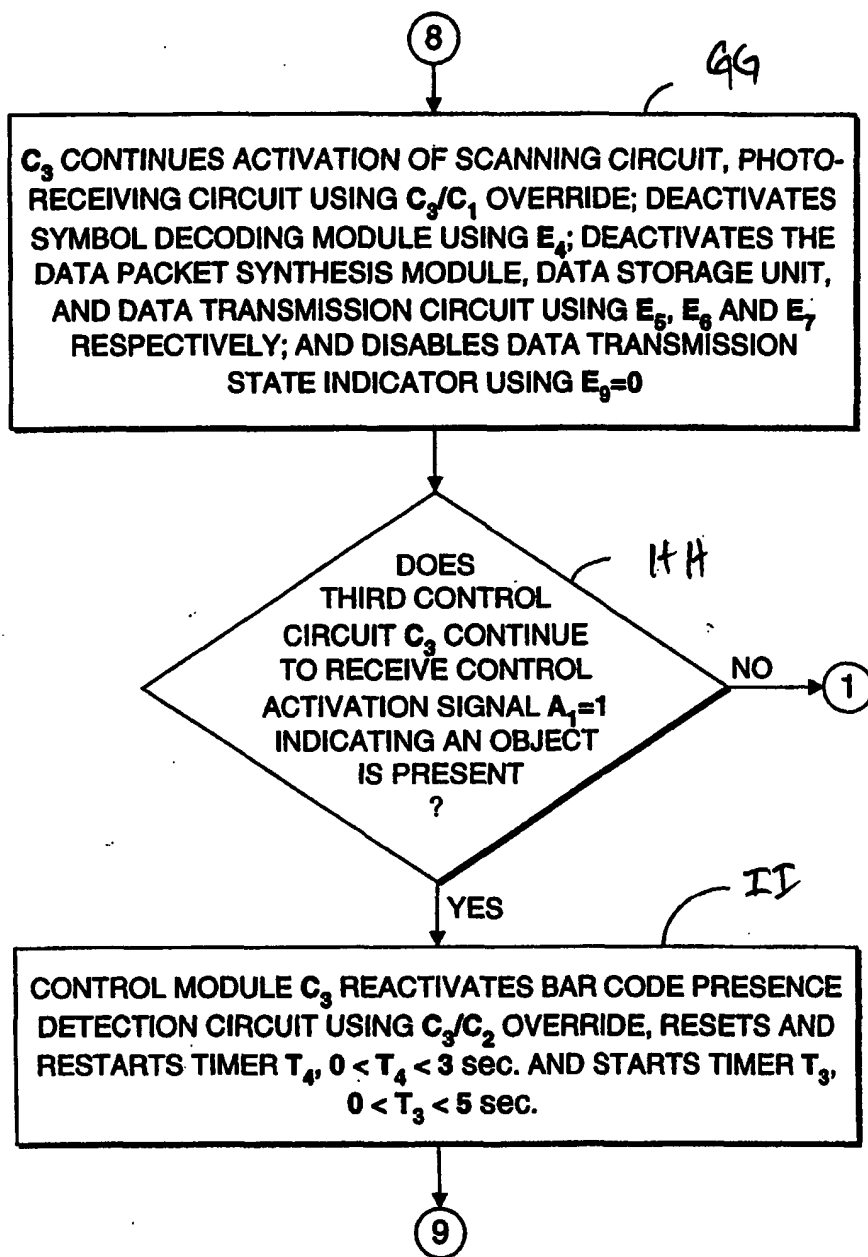


FIG 46 C4

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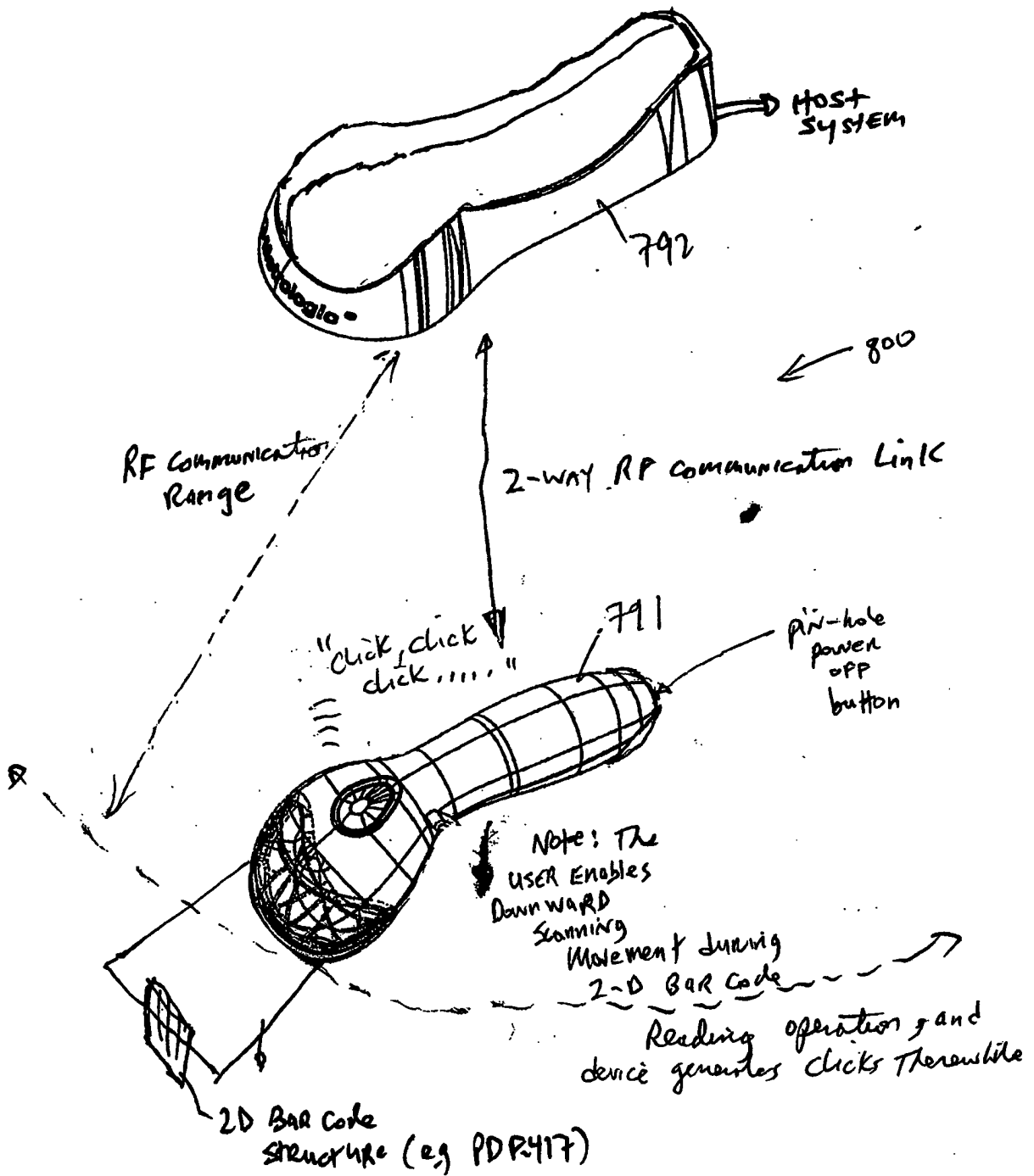
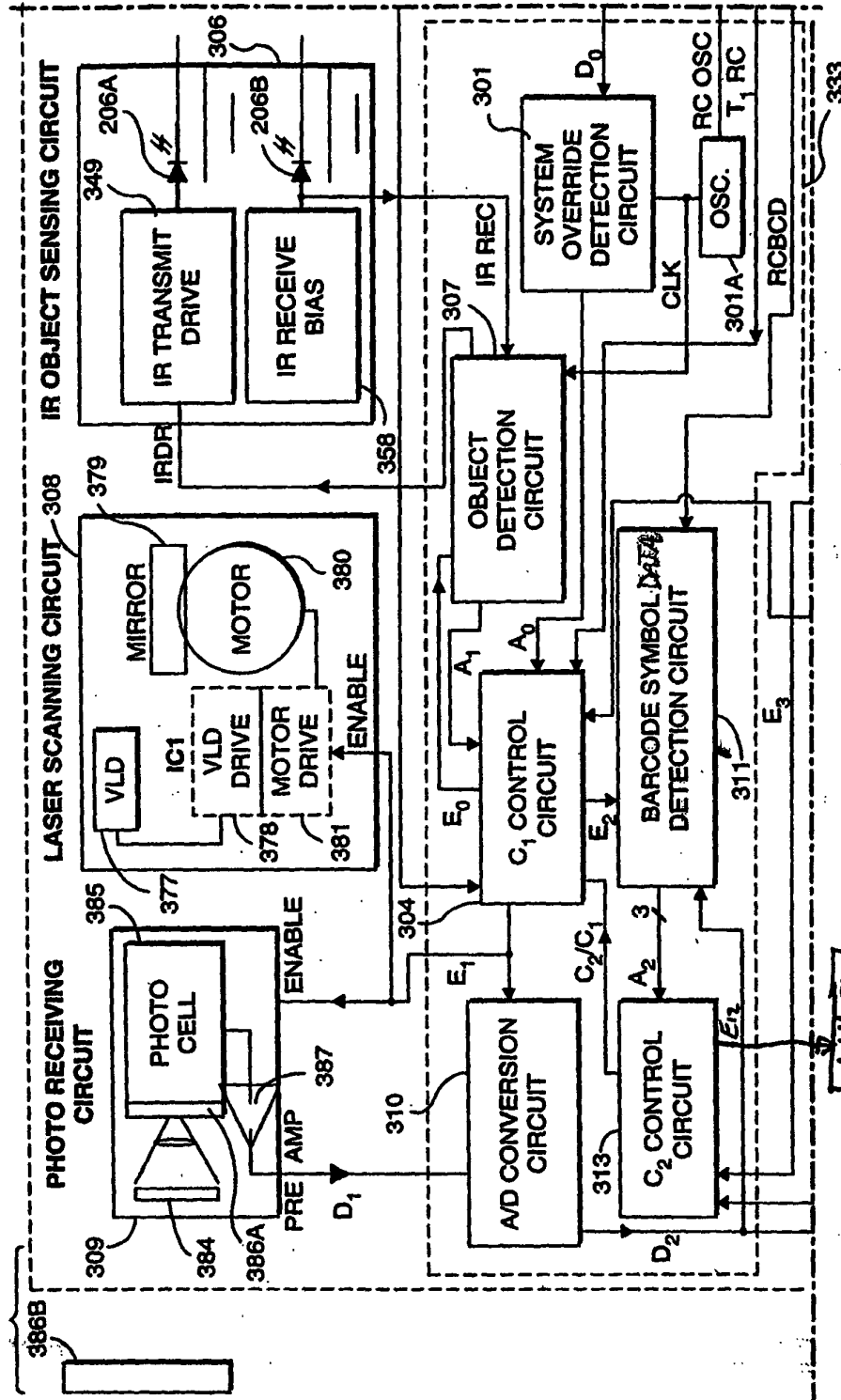


FIG. 47

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806 FIG. 47A1
(pico-electric transducer)

Active Scan
Data Capture
Booster
Transducer

800

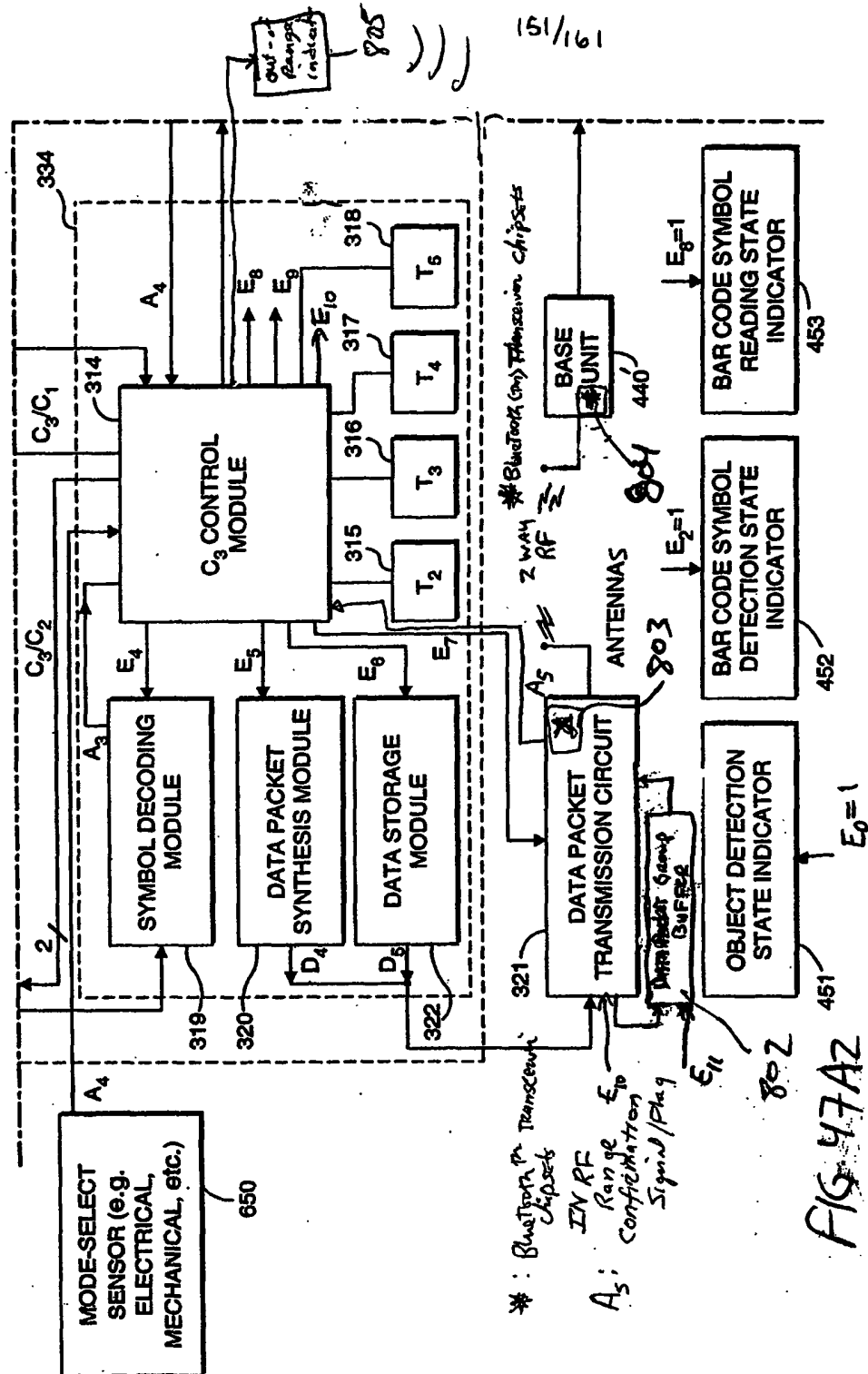
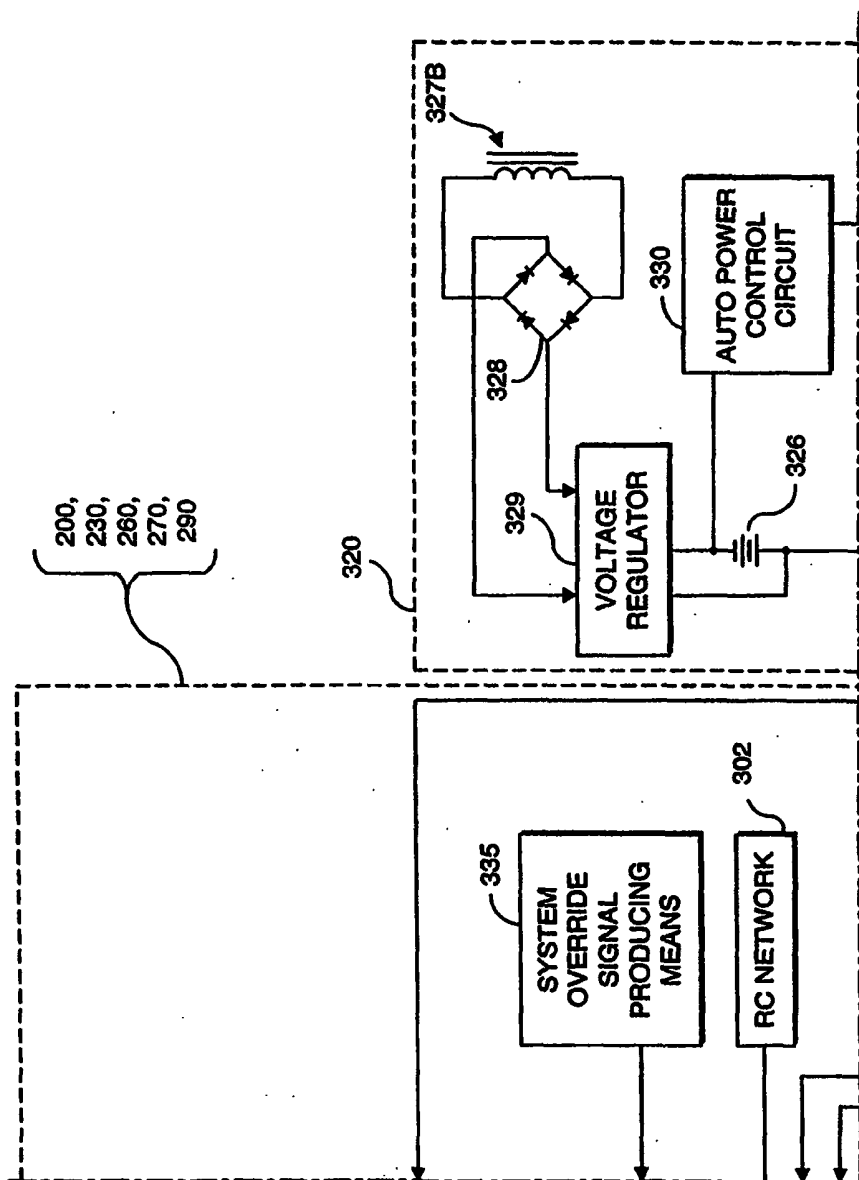
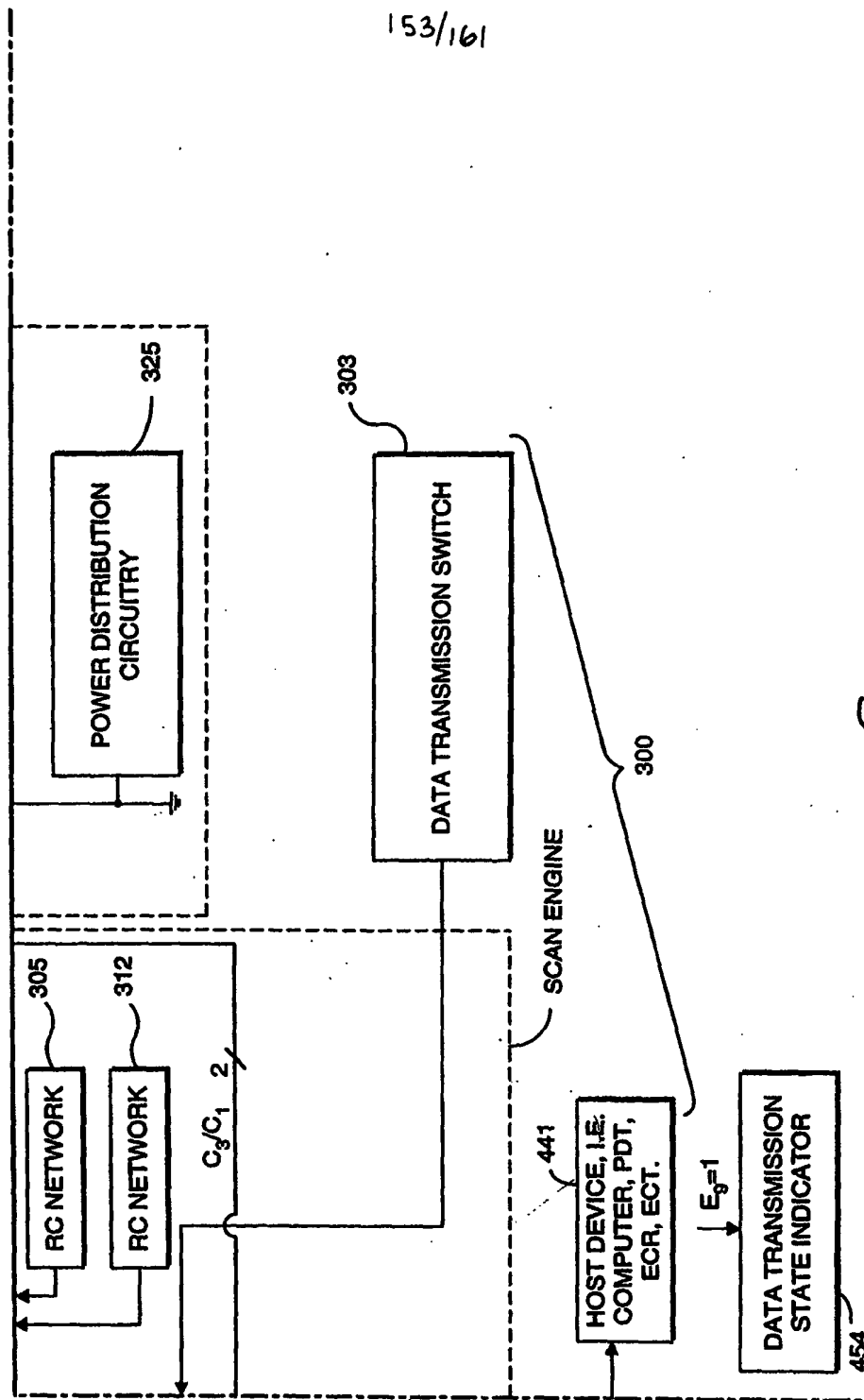


FIG 47A2

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FIG 47A3





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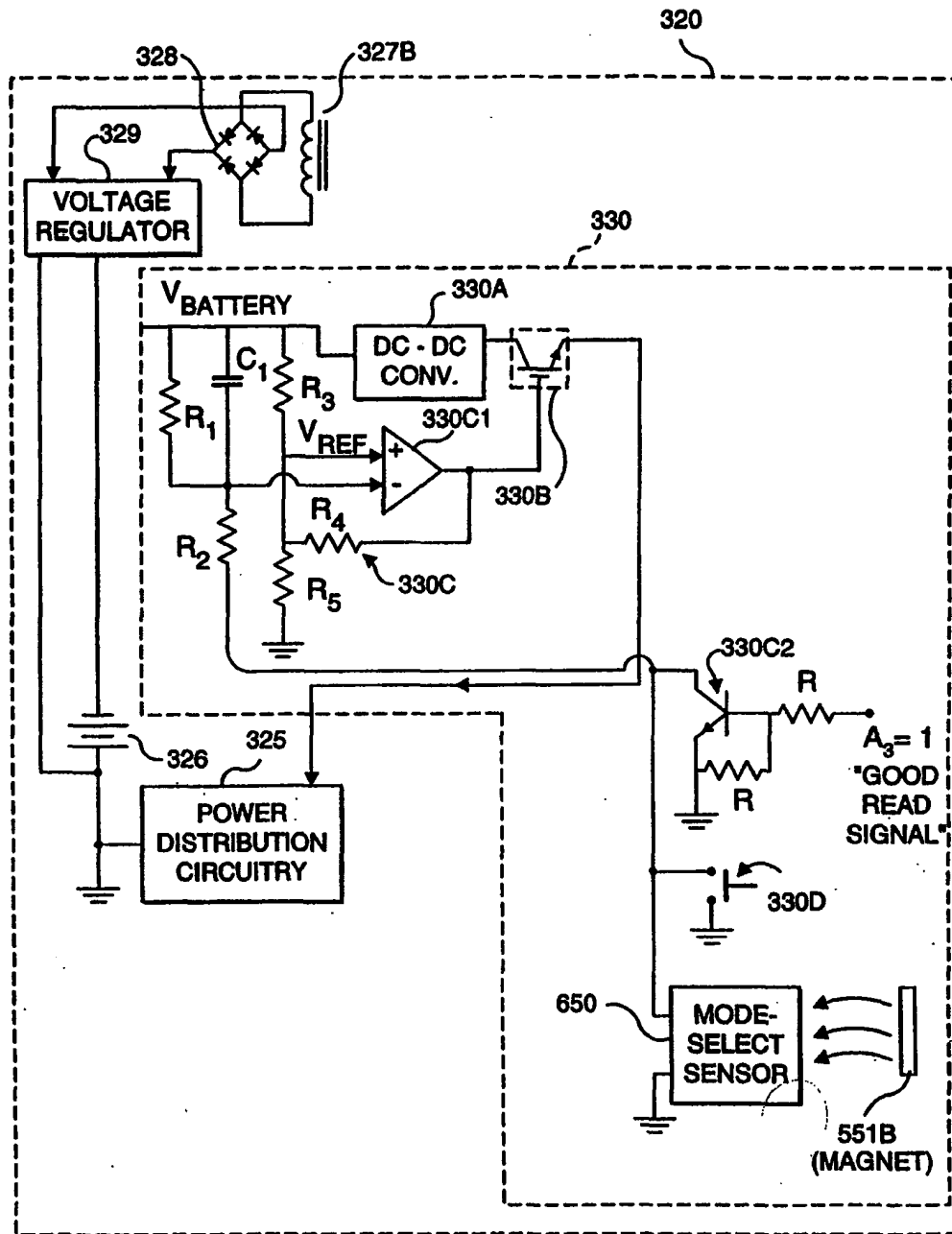


FIG. 47B

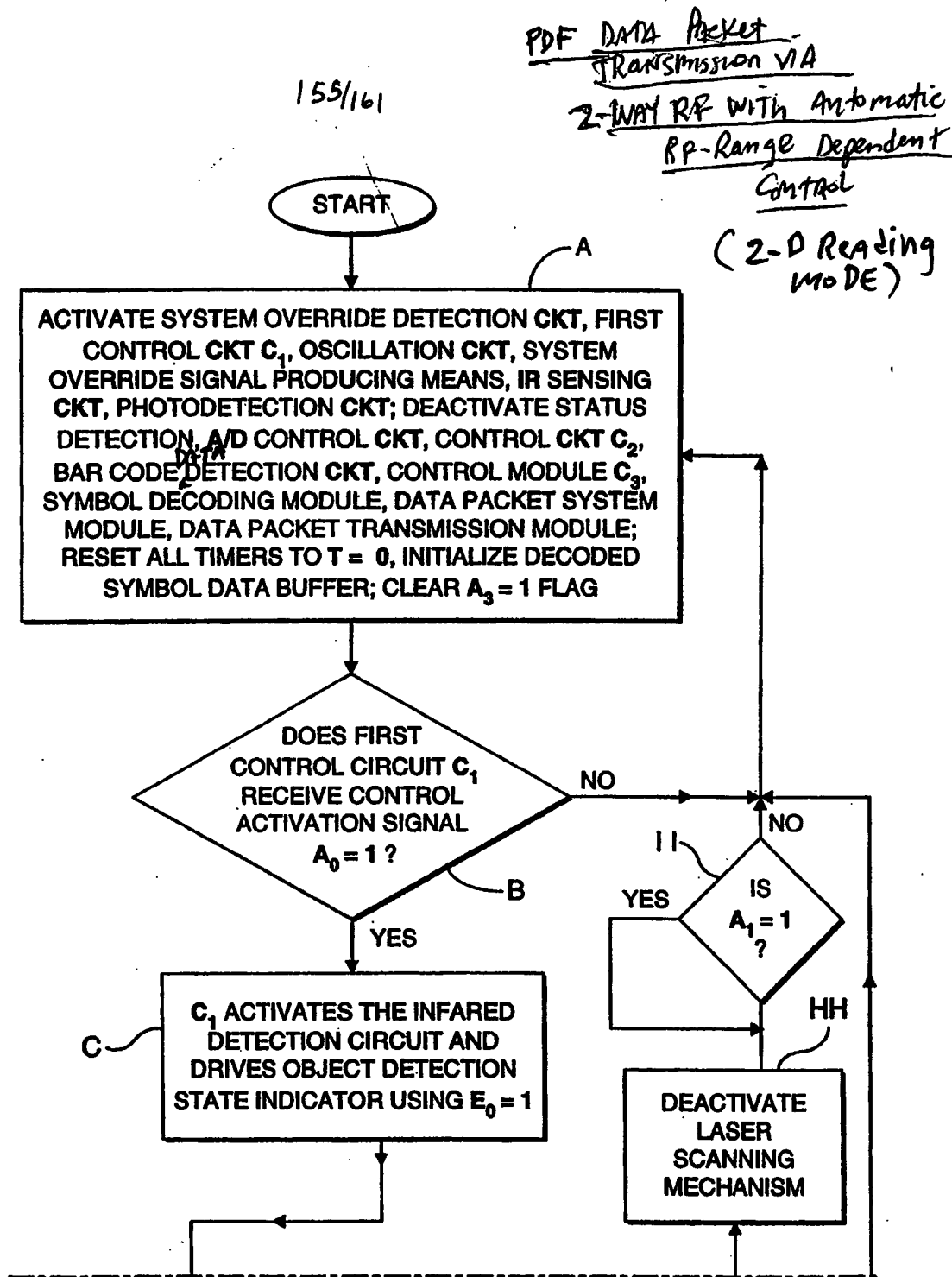
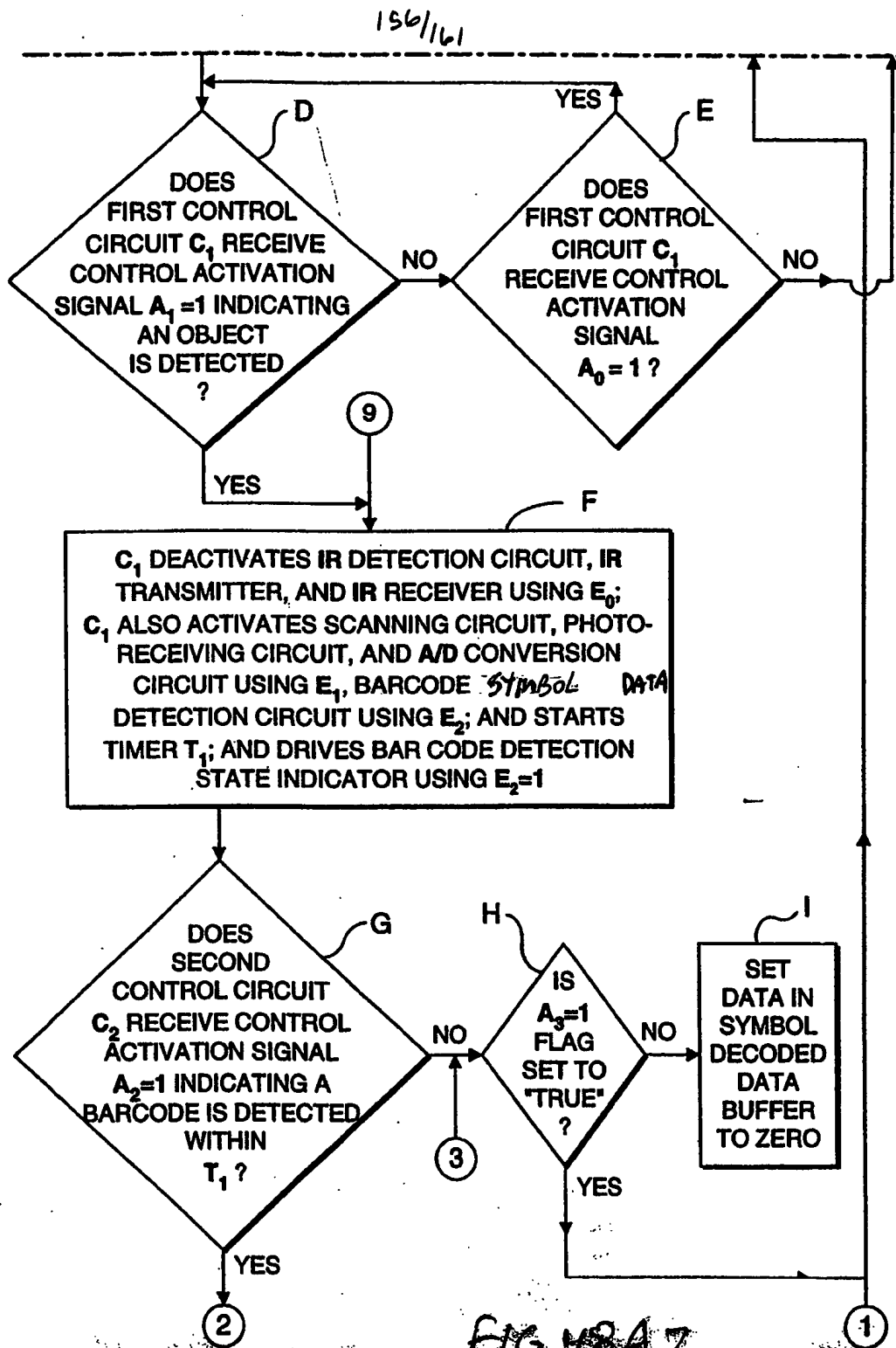
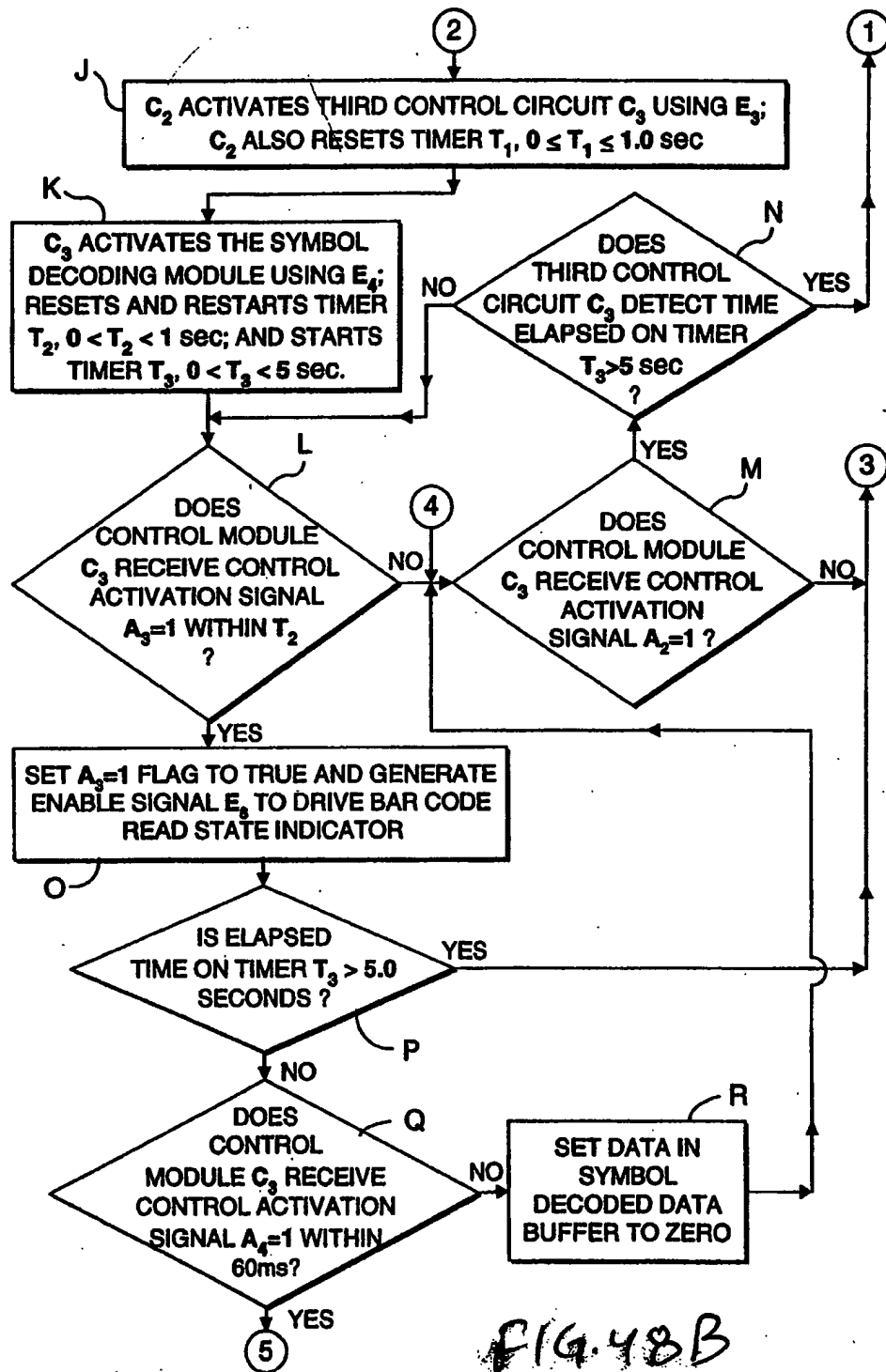


FIG. 48A1



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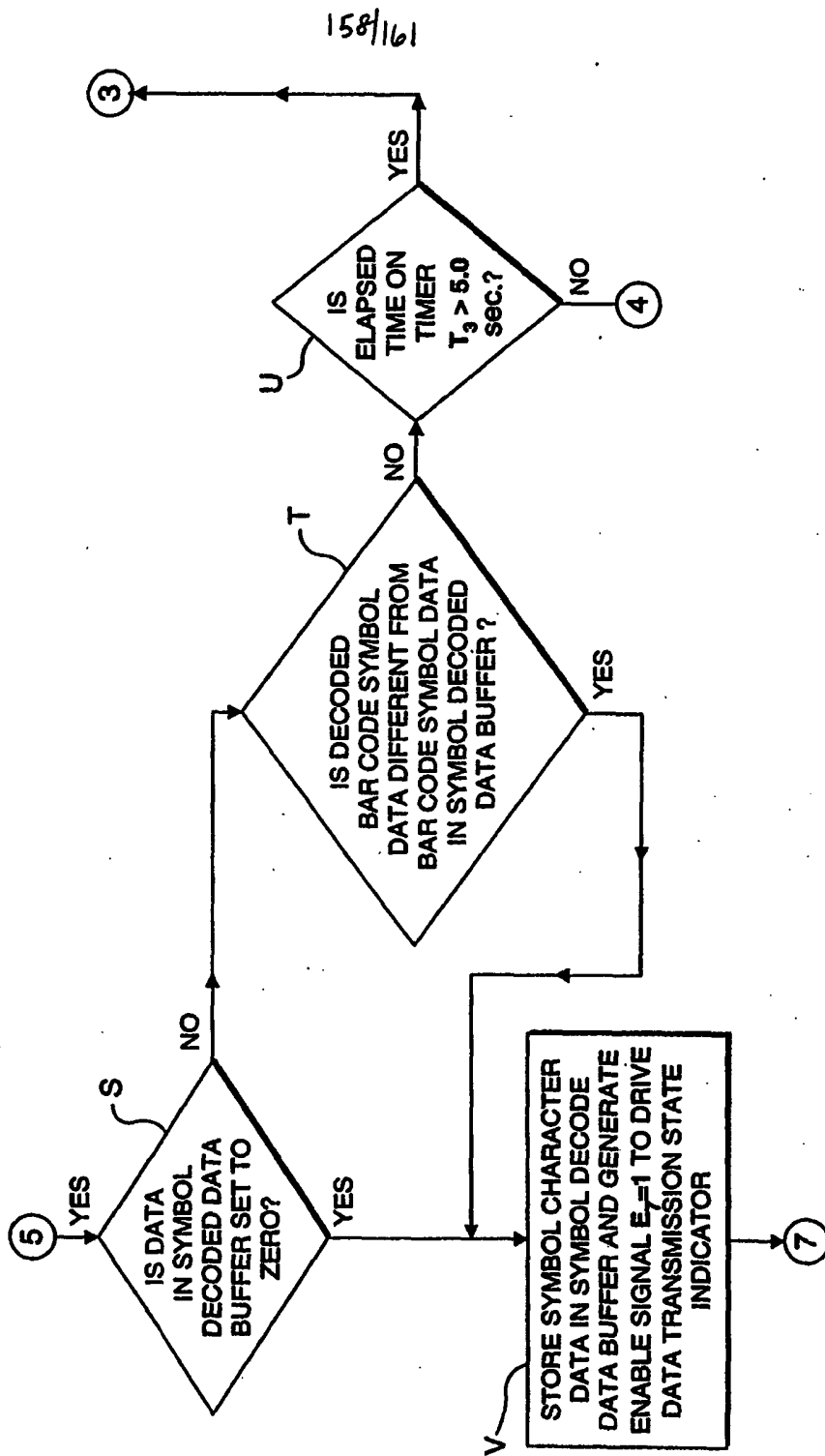


FIG. 4Bc1

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7

THIRD CONTROL CIRCUIT C_3 CONTINUES ACTIVATION OF LASER DIODE, SCANNING MOTOR, PHOTORECEIVING CIRCUIT, A/D CONVERSION CIRCUIT; DEACTIVATES SYMBOL DECODING MODULE; AND COMMENCES ACTIVATION DATA PACKET SYNTHESIS MODULE

W

UNDER C_3 CONTROL, DATA PACKET SYNTHESIS MODULE CONSTRUCTS DATA PACKET CONSISTING OF SYMBOL CHARACTER DATA, TRANSMITTER NUMBER, DATA PACKET GROUP NUMBER, CHECK CHARACTER AND FRAMING CHARACTERS

X

IS IN-RF RANGE CONFIRMATION SIGNAL $A_5=1$?

NO

YES

Y

ARE DATA PACKET GROUP(S) STORED IN DATA PACKET GROUP BUFFER?

NO

Z

YES

C_3 Control Module Generates Enable Signal $E_{11}=1$ Reloading Buffered Data Packet Group(s) into Data Packet Transmission Circuit

AA

Control module C_3 Generates Enable Signal $E_{10}=1$ loading currently Synthesized Data packet Group into Data Packet Transmission Circuit

BB

11

FIG. 48CZ

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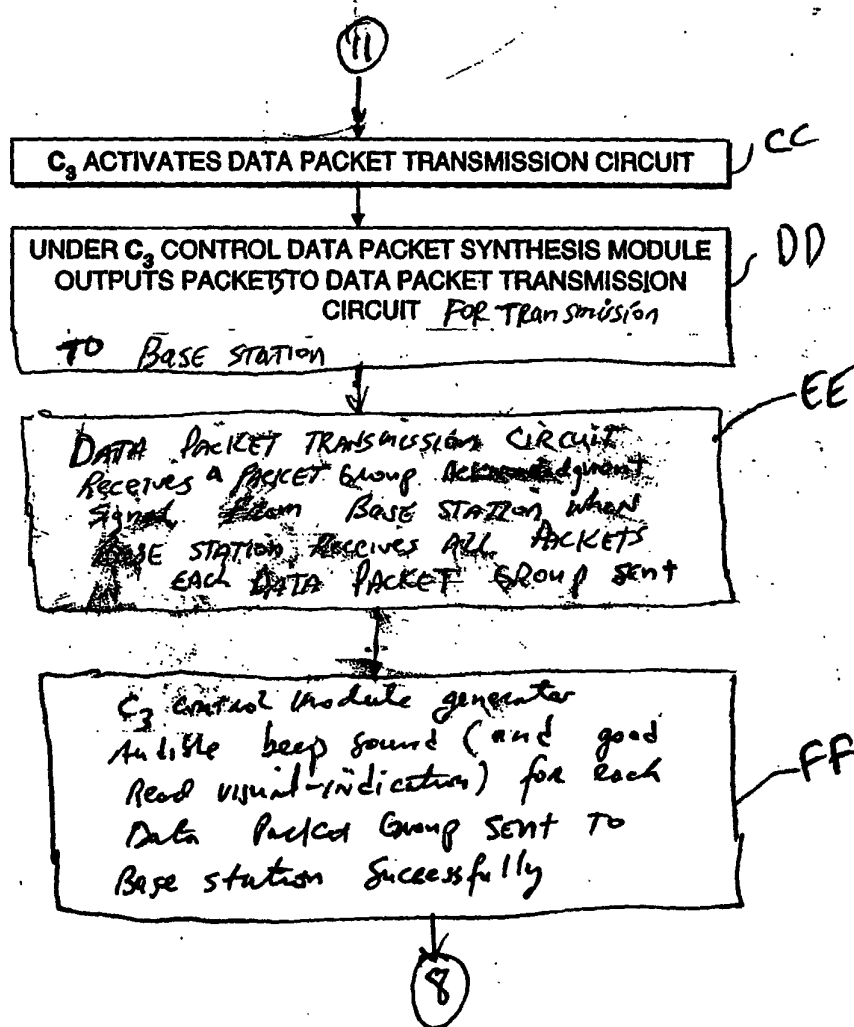


FIG. 48C3

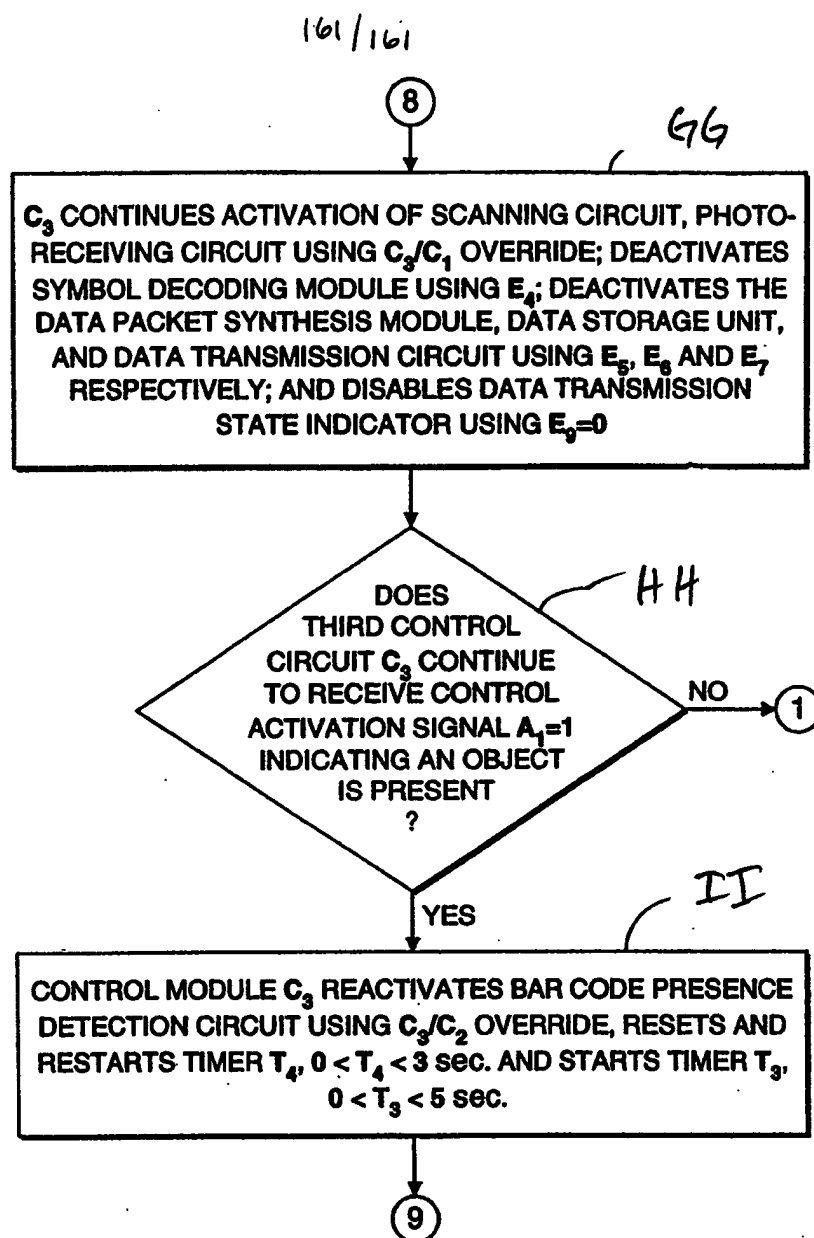


FIG. 48C4